

TECHNOLOGY DEPT.

First Copy

# PURCHASING

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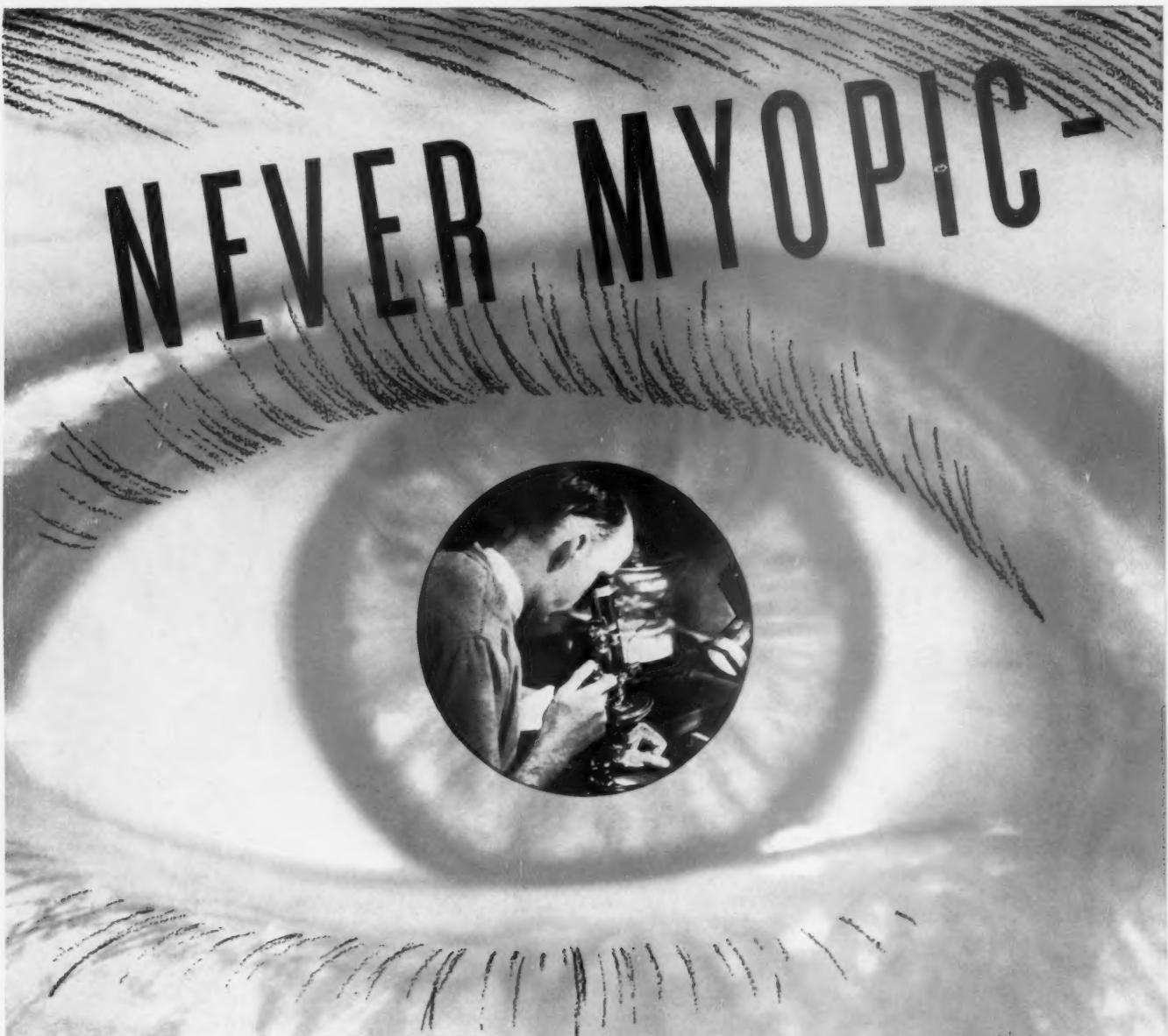


“Bun”

—see page 25

OCTOBER 1937

Vol. V No. 10



Always farsighted, Republic Steel today is helping to win important battles for industry. This vigilant policy looks into and senses the needs of the future.

From the world-famous laboratories and the new and modern mills of Republic come unceasingly new steels for new uses—better steels for old uses.

During the past 30 months Republic has appropriated nearly \$50,000,000 for new mills and equipment.

Republic acquired Corrigan-McKinney Steel Co., Gulf States Steel Co., Truscon Steel Co., and others. It enlarged blast furnace capacity. It revolutionized pipe

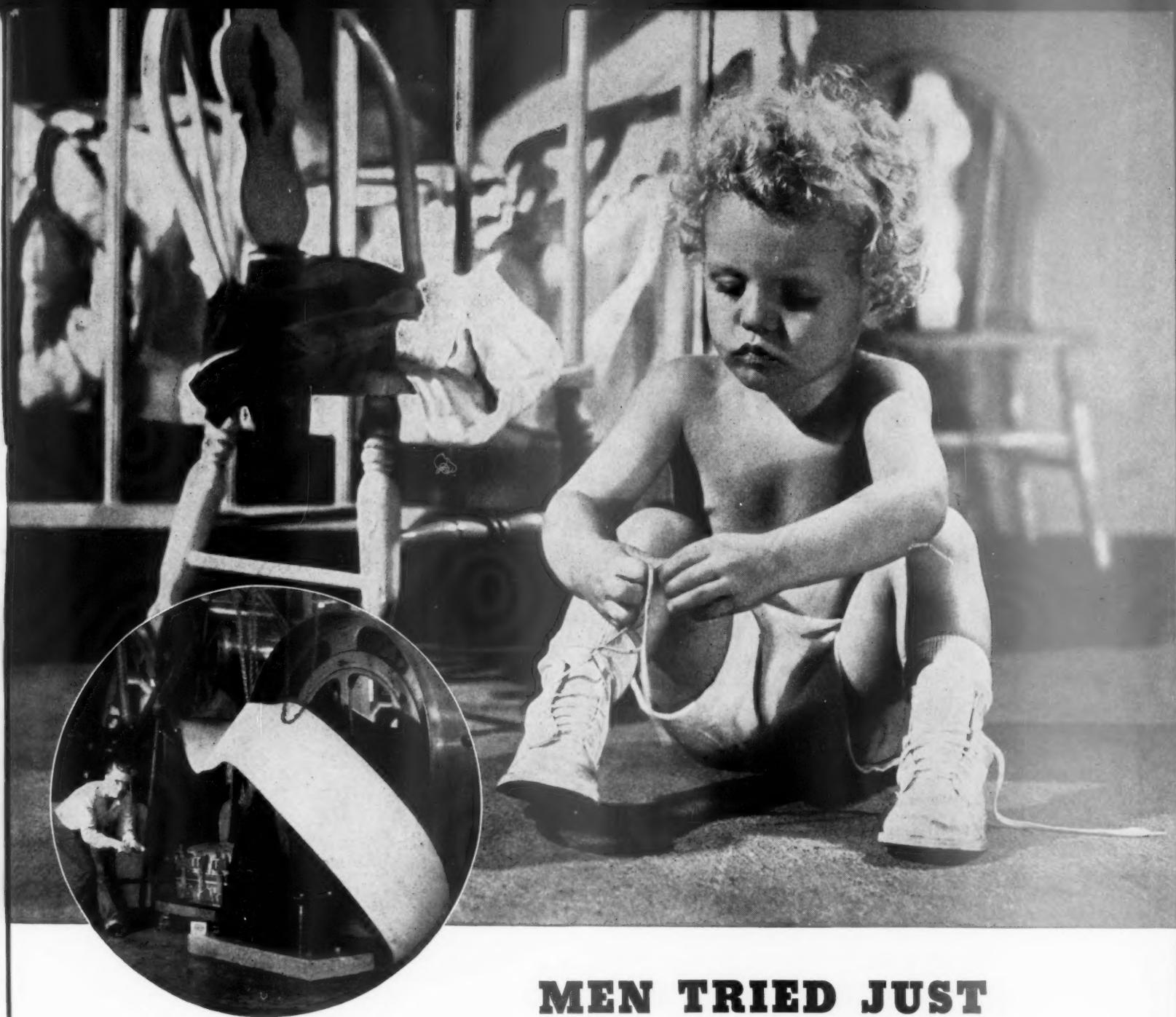
manufacture with its electric weld process. It built a new wire mill for the production of electro-galvanized wire and entered the vast farm market. It built the most efficient type of cold-rolled tin plate mill. It developed among other new products heat-treated casing for oil wells and built a new plant to produce it. It strengthened its position as the world's largest manufacturer of alloy steels by expanding its production capacity. And continuing its policy, Republic will soon announce its latest achievement—the largest, fastest and most modern hot and cold continuous strip mill in the world.

**Republic Steel**  
*Corporation*



GENERAL OFFICES . . . CLEVELAND, OHIO

*When writing Republic Steel Corp. (or Steel and Tube, Inc.) for further information, please address Department EP*



## MEN TRIED JUST

## AS HARD TO TIE BELT ENDS TOGETHER

*A typical example of Goodrich development in rubber*

GROWN men, trained engineers, tried to fasten belt ends together—and for many years their splices were as apt to come apart as the little fellow's shoestrings.

Some belts could be laced up or held with metal fasteners but those high-tension belts on heavy machines, or high-speed belts running a mile a minute, or more, failed at the splices with discouraging regularity. Goodrich research men, already busy with other improvements in belting, took this as the problem of the year.

They found failures came not so much from weak splices as from ten-

sion and air resistance. Even the thinnest feather-edge of fabric would be loosened by repeated flexing and air currents; then the belt plies would separate. So they designed a splice in which a section of an inner ply is removed, the outer ply carried under the surface, covered, sealed with rubber and vulcanized in a portable electric vulcanizer. Belts with this new "Ply-lock" splice lasted sometimes ten times as long as the old belts. Users constantly tell us of serious belt problems which have been completely solved.

Goodrich is always busy with development work on rubber products.

Much of it applies to new products, new uses—but no product is too "staple" or too standardized to get its share of this work. Goodrich research in rubber has resulted in important improvements in conveyor belts, rubber-lined pipe, steam hose, suction hose and hundreds of other products classed generally as mechanical rubber goods. Ask your Goodrich distributor about them. Write us if you don't know him. The B. F. Goodrich Company, Mechanical Rubber Goods Division, Akron, Ohio.

**Goodrich**  
ALL *products* *problem* IN RUBBER

# PURCHASING

*Established 1916 as "The Purchasing Agent"  
Consolidated with "The Executive Purchaser"*

PURCHASING is an independent journal, not the official organ of any association. It is the only publication of national scope devoted exclusively to the interests and problems of the purchasing executive in industry and government.

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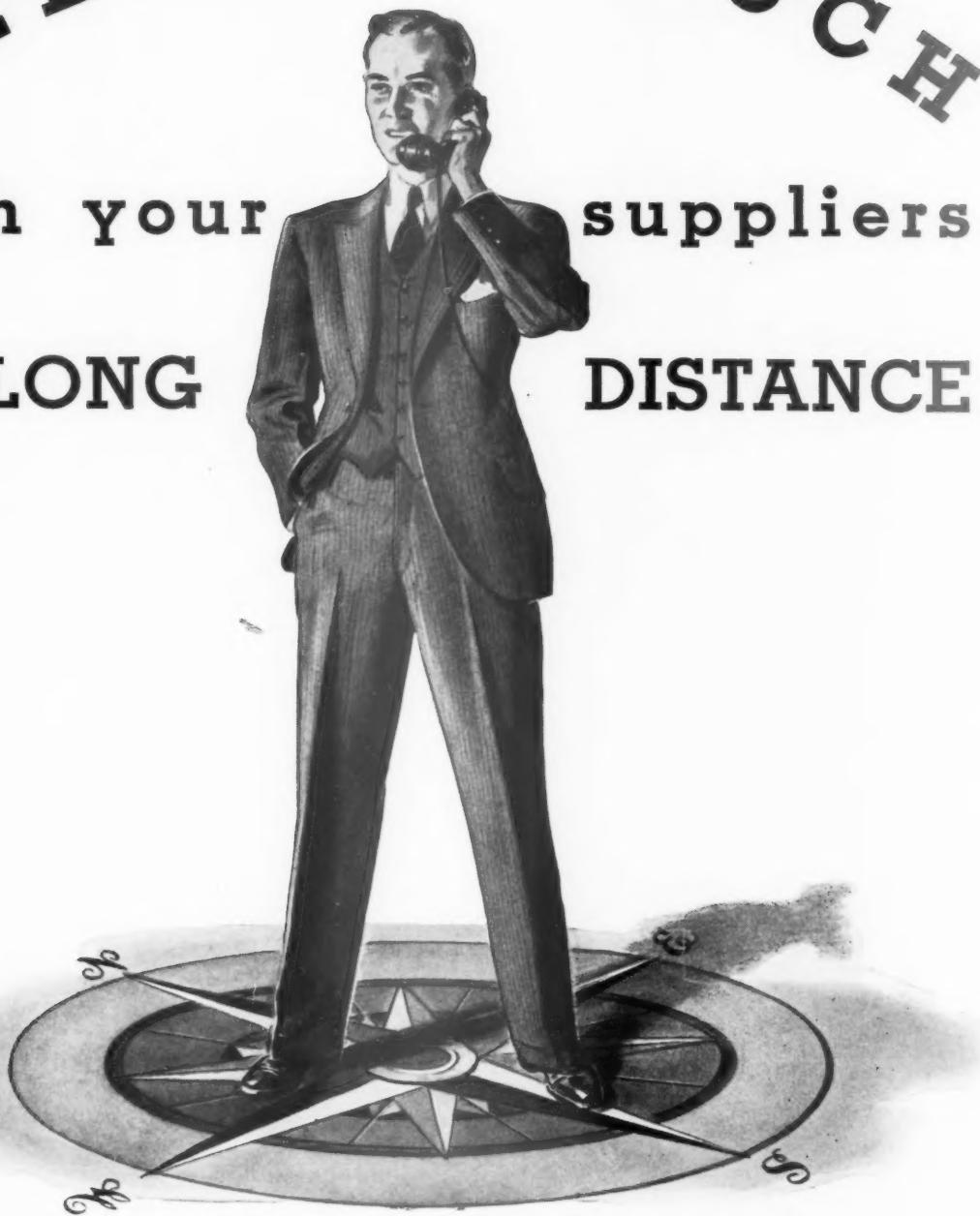
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**October 1937**

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PURCHASING

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# ***Yours on Request***

Purchasing agents will find it well worth their while to read the publications reviewed on this and the following pages. From among the many submitted to us, they have been selected by the editors as having greatest interest and utility value to purchasing agents.

To obtain copies, simply fill in and mail coupon at the bottom of this page.

**139.** A strikingly original booklet prepared by the L. L. Brown Paper Co., Adams, Mass., is called "Blazing a Trail through Rag Continent Jungles." The theme of the book is a clarification of the ambiguous quality designation of "Rag content" as applied to paper, and a guide to the selection of proper grade.

**151.** Catalog No. 14 of the Federbush Co., is a convenient index to a comprehensive line of loose-leaf binders, catalog covers and sales equipment, memo books and visible record equipment. The binders include the ring, post, prong and zipper types, suitable for everyday use or for transfer and storage files. The catalog contains 180 pages, bound loose-leaf style, with a unique marginal guide for ready reference.

**163.** Extremely useful to buyers and prospective buyers of anodes is a 12-page, 8 $\frac{1}{2}$ " x 11", booklet on "Controlled Grain Anodes" prepared by the Seymour Mfg. Co. The attributes of a "good" anode are described in the opening page, followed by analyses of four types of nickel anodes which are in widest use. To meet special needs, other anodes of nickel, copper, brass, bronze and zinc may be had in any desired shape. Various available shapes are shown, supplemented by useful data, tested solutions, advice on how to overcome common anode problems and how to order anodes.

**170.** A new pricing arrangement which results in lower net prices in larger quantities is a feature of the Sectional Post Binder Catalog recently issued by C. E. Sheppard Co. 36 styles of binders are illustrated, accompanied by specifications and dimensions of both stock and special sizes. These sizes cover virtually every need imaginable.

**179.** The 212-page, 5" x 8 $\frac{3}{4}$ ", Stock List and Reference Book issued by Scully Steel Products Co. provides a thorough description of over fifty types of steel products that are available at a moment's notice from eight warehouses. The book is conveniently thumb-indexed and contains S.A.E. specifications and numbering system, color code and tables of allowable concentric and uniform loads.

**187.** An attractive new catalog published by Lyon Metal Products depicts a wide range of steel boxes for every manufacturing and storage use—shelf boxes for the storage of small parts; shop and tote boxes for transportation of work in boxes; nesting boxes; and suggestions for the use of special steel containers designed for use with specific production systems. Also included is brief descriptive matter on steel shelving, lockers, shop equipment and tool storage equipment.

**204.** "Guide to Better Packing and Shipping Methods" is the apt title of Signode Steel Strapping Co.'s Catalog No. 17. Condensed in its 40 pages are descriptions of many types of shipping and packing methods, as well as of equipment designed to execute these methods with maximum

efficiency, protection and economy. The catalog points the way to lower freight bills, faster and safer packing, reduction of damage, elimination of pilfering, reduced container costs, greater customer satisfaction.

**205.** A new folder featuring its alloy steels has been issued by Bliss & Laughlin, Inc. Particularly useful is a table listing the more popular grades of alloy steels used for the fabrication of machine parts and other products employed in various types of equipment, with their S.A.E. grade, approximate machine rating and approximate turning speed. For unusual problems, special alloy steels are developed to meet individual requirements.

**206.** A surprisingly specialized line of stamp pads covering numerous office and industrial uses is illustrated in a folder prepared by the Rivet-O Mfg. Co. The folder also lists a number of other marking devices and products, as well as names of large firms employing them regularly as a result of exhaustive tests.

**207.** The Morse Chain Co.'s spiral bound, 96-page, 5 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ ", Catalog R-53 details complete specifications and engineering data concerning its line of roller chains and sprockets. It represents a useful addition to the catalog file of every purchasing department that requires these products.

**208.** In its 109-page, 5" x 7", Grinding Wheel Data Book, the Abrasive Co. presents detailed information on various phases of grinding wheel operation. Diagrams and dimensions of standard types of grinding wheels and shapes of wheel faces, a 14-page table of standard sizes, a wheel selection table offering general recommendations for innumerable materials and jobs are included with other valuable data.

**209.** A new book of specimens and samples of rag content onion skin papers has been issued by the Esleeck Mfg. Co. A variety of colors, weights and finishes in two grades are available for such purposes as records, forms, thin letterheads, copies, advertising literature, etc. Features claimed for these papers include strength for erasing and excessive handling, permanency, saving in typing and mailing expense as well as in filing space.

**210.** A comprehensive presentation of virtually all types of gaskets is contained in the 32-page, 8 $\frac{1}{2}$ " x 11", Catalog No. 37 of the Melrath Supply & Gasket Co. The needs of all branches of industry and public utilities are covered with standard and special die-cut gaskets and sheet packing and gaskets made of many materials. Ample illustrations and engineering data.

**211.** The 32-page, 8 $\frac{1}{2}$ " x 11", Johnson Bronze Co. Bulletin 370 lists numerically and by progressive sizes all general purpose bronze bearings and bushings, accompanied by dimensions and prices. It also tabulates 229 sizes of cored, solid and hexagon bronze bars, as well as 125 sizes of graphited bronze bearings.

**212.** The second edition of the Aluminum Industries, Inc. Permite Ready-Mixed Aluminum Paint Book is now available. Appropriately printed in aluminum and black inks, its 60, 8 $\frac{1}{2}$ " x 11" pages comprise an interesting and effective account of the advantages of ready-mixed aluminum paint for protection against corrosion, moisture, fumes, acids, excessive heat and for better lighting, as well as for product finish, truck and bus covering, etc. Convincing evidence is presented in the description of water, acid, salt spray, weather, heat reflecting and evaporation tests.

**213.** The Controlograph, subject of Consolidated Ashcroft Hancock Co.'s 24-page Catalog 2500, is used in all industries where temperature or pressure is a vital factor in processing. Charts, photographs and text provide full data concerning the construction and application of this instrument.

(Additional listings on page 6)

**PURCHASING**, 11 West 42nd St., New York, N. Y.

I wish to receive the following literature:

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**PAGE 4**

**PURCHASING**

# TOOL GRINDING



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A new Norton development  
which you should try on your  
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pecially satisfactory for high  
speed and sensitive, hardened  
tool steel alloys.

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# ***Yours on Request***

Purchasing agents will find it well worth their while to read the publications reviewed on this and the following pages. From among the many submitted to us, they have been selected by the editors as having greatest interest and utility value to purchasing agents.

To obtain copies, simply fill in and mail coupon at the bottom of this page.

**214.** A 48-page booklet published by the Carborundum Co. constitutes a thorough analysis of the problems of "Grinding Cemented Carbides." Outstanding are the sections devoted to cemented carbides and their characteristics, grades, factors affecting grinding wheel action on cemented carbides, how to grind cemented carbide tools, classes of tools, suggestions for improving grinding wheel action and economy, etc.

**215.** Just released is the new 36-page Witt Cornice Co. catalog devoted to its line of ash, garbage, oily-waste, roller, hoisting and other types of cans. Of particular interest to purchasing agents are the pictures and charts which accompany a description of compression tests conducted by the Pittsburgh Testing Laboratory. Physical characteristics, dimensions and capacities of the many cans illustrated are detailed.

**216.** An elaborate portfolio containing 26 samples of tags made of kraft, jute, rope and cloth and procurable in 24 colors, samples of which are also shown, has been compiled by the Campbell Box & Tag Co. Each sample tag in the portfolio carries detailed specifications. The portfolio includes, in addition, samples of strings used on tags, these being in numerous colors and materials, as well as samples of tinned tag wire, parcel hooks and deadlocks.

**217.** A handy, 32-page, "Manual of Metal-Cutting Information" has been published by W. O. Barnes Co., Inc. A variety of subjects are covered including: correct use of hand operated hack saws, highlights in power hack saw operation, causes of common difficulties, how to get best production from band saws, how to adjust band saws. This information is supplemented by tables of recommended teeth and speeds, dimensions of hack saw blades, etc.

**218.** 448 pages in Brown & Sharpe's  $4\frac{5}{8}$  x  $6\frac{5}{8}$ " Small Tool Catalog No. 32 provide as complete a presentation of small tool data, specifications and pictures as we have ever seen. This comprehensive catalog is divided into five sections: machinists' tools; cutters and hobs; arbors, collets and adapters; screw machine tools; miscellaneous equipment and tables.

**219.** The Taber Abraser is described in an 8-page,  $8\frac{1}{2}$  x 11" folder issued by the Taber Instrument Co. The Abraser is a precision testing machine for measuring the wear resistance, toughness, adhesion and rub-off qualities of surface finishes such as enamels, electroplate, anodizing, linoleum, molded plastic sheets, leather coverings.

**220.** Westinghouse Electric & Mfg. Co.'s "Millite Luminaires" are illustrated and described in a 4-page,  $8\frac{1}{2}$  x 11" folder. "Millite" is a heavy duty lighting unit

designed for use wherever lighting equipment is mounted at 30 feet or more and where atmospheric and general service conditions are severe. Qualities claimed for it are its ability to resist shock, abuse, temperature changes; maximum lighting efficiency; easy to clean; shatterproof; lightweight, removable and interchangeable reflectors.

**221.** The new catalog of Grobet Swiss Files illustrates over 4,000 different shapes, sizes and cuts for precision work, made in cuts 00 to 8, as well as a complete line of files for filing machines.

**222.** True to its title, the Anchor Fence Specification Manual No. 89 (48 pages,  $8\frac{1}{2}$  x 11") details specifications of various types of chain link and iron fences. Supplementing the text are photographs and drawings which clearly depict features of construction in a "close-up" fashion. While of a technical nature, the drawings are easily understood by anyone.

**223.** A colorful 50-page,  $8\frac{1}{2}$  x 11", catalog of Van Dorn Electric Tools illustrates in red and black an extensive line of tools covering a wide range of industrial needs. A partial list of the tools represented includes electric drills, saws, sanders, surfacers, polishers, grinders, screwdrivers, hammers, wrenches, tappers.

**224.** The features and construction of the air-driven Speed-Bloc Sander are described in a 16-page, 6 x  $9\frac{1}{4}$ " booklet prepared by Sterling Products Co. Designed to replace hand sanding and rubbing on metal, wood, lacquer, leather and composition surfaces, this machine can be employed in every branch of industry where abrasives are used. The new model embodies several improvements, foremost being weight reduction to  $5\frac{1}{2}$  pounds and a more flexible floating block. It is applicable for both heavy and light duty.

**225.** The M. B. Skinner Co.'s 14-page, 4 $\frac{1}{2}$  x 6" "Pipe Repair Handbook" explains how to repair leaks quickly, without taking pipe lines out of service. It covers all kinds of pipe line leaks—holes, splits, pitted or corroded sections; also joints, such as threaded, bell and spigot, welded joints, etc.

**226.** Bulletin No. 17, one of a series dealing with definite groups of applications of the Dardelet Self-Locking Threads, has been issued by the Dardelet Threadlock Corp. to describe the use of this thread on cap and set screws to achieve positive locking, greater strength, easy assembly and economy. Among the specific applications are for securing brackets to main members, split bearings, auxiliary machine units; collars, pulleys, cams and levers to shafts; door knobs to spindles; sub-assemblies to main assemblies, etc.

**227.** An extensive array of A. C. and D. C. motors is presented in the attractive, profusely illustrated, 60-page,  $8\frac{1}{2}$  x 11" Bulletin No. 700 published by Louis Allis Co. A size and type electric motor for every industrial requirement includes squirrel-cage, fan-cooled, explosion-proof, arbor, flange-type, shaftless, multi-speed, self-cleaning textile, loom, etc. Also shown are frequency converters, inverted rotary converters, gear reducers. Details of construction are given in clear, concise style.

**228.** Full-size illustrations of mercury-to-mercury and mercury-to-metal switches, with a table showing the capacity and electrical specifications of each type, are featured in the General Electric Vapor Lamp Co.'s 12-page,  $8\frac{1}{2}$  x 11" Catalog 603. Included are suggestions for efficient use of mercury switches and discussion of factors influencing the choice of the various types.

(Additional listings on page 4)

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**PAGE 6**

**PURCHASING**

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THROUGH the use of Challenger Belting, thousands of plants have come to know the meaning of Republic Quality. The laboratory developments and rigid manufacturing practice that have made this belt so famous for long satisfactory service are equally applied to Republic's many grades of transmission, conveyor and elevator belting, water hose, air hose, steam hose and scores of products including packing and molded goods.

Republic uses every scientific method to give mechanical rubber products their best possible service. Since 1901, our efforts have been devoted to that aim. To such products, the name Republic is a brand of highest merit—an assurance of dependability—no matter how severe your requirements may be.

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BELTING • PACKING  
MOLDED PRODUCTS



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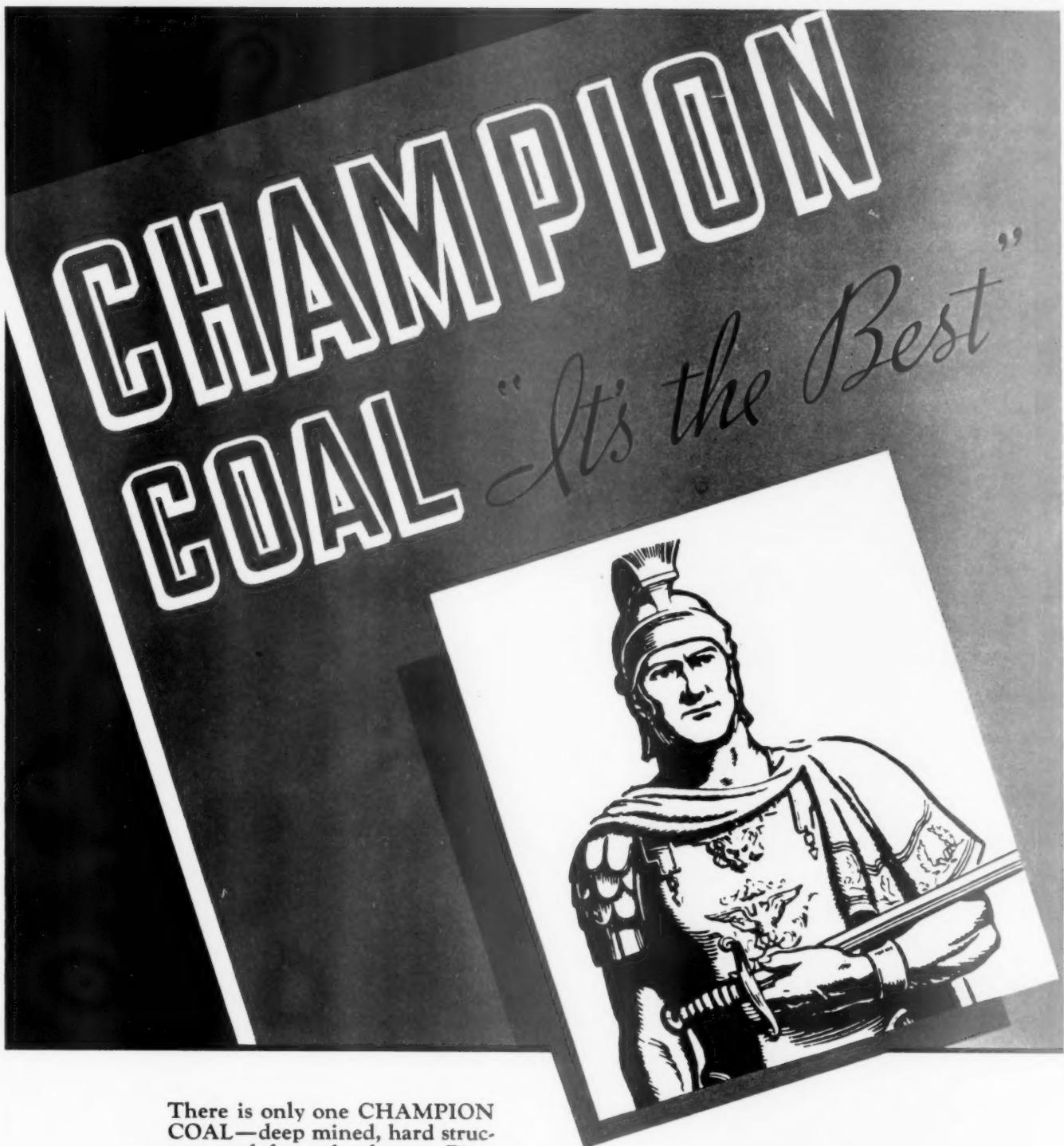
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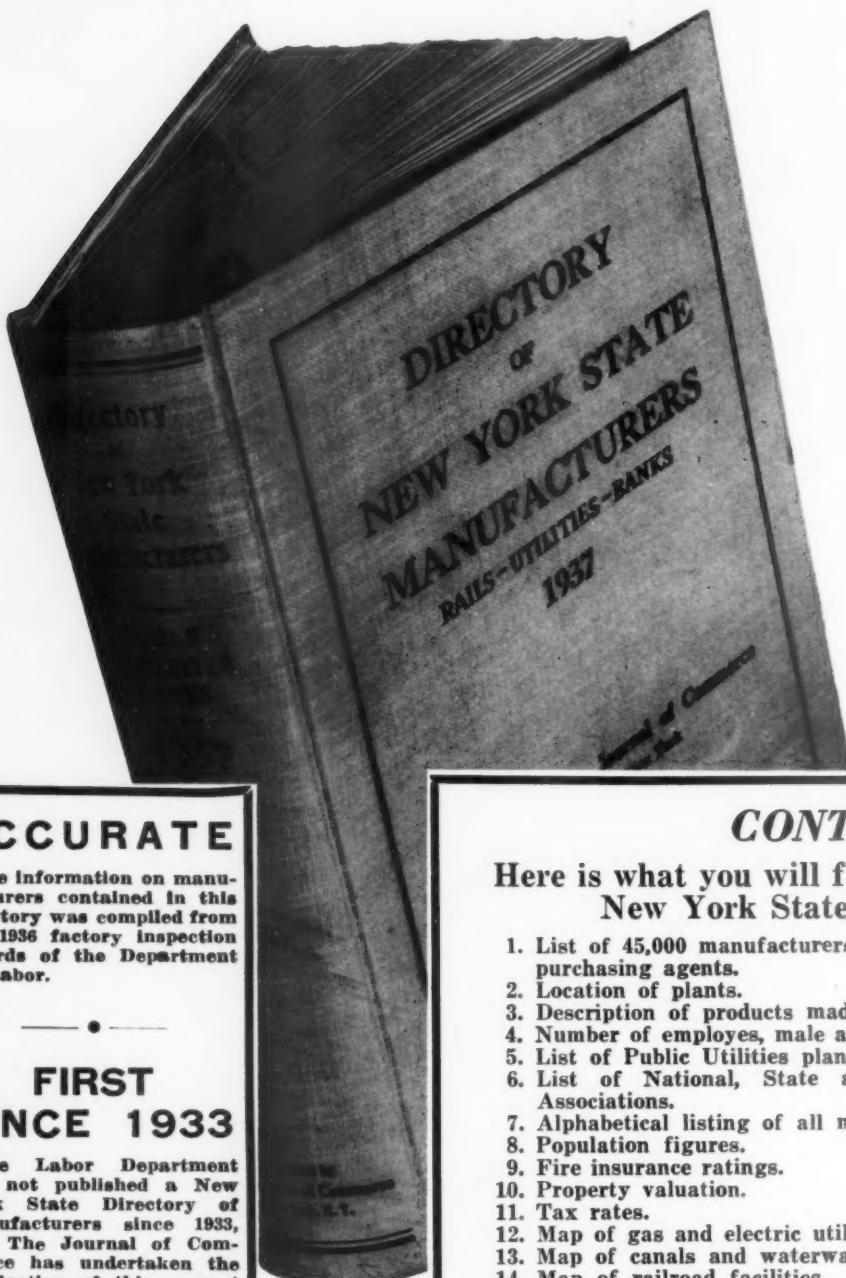
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**PITTSBURGH COAL COMPANY OF WISCONSIN** . . . Duluth . . . Superior . . . Minneapolis . . . St. Paul.  
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### ACCURATE

The information on manufacturers contained in this directory was compiled from the 1936 factory inspection records of the Department of Labor.

### FIRST SINCE 1933

The Labor Department has not published a New York State Directory of Manufacturers since 1933, and The Journal of Commerce has undertaken the publication of this present directory in collaboration with the Labor Department of the State of New York.

### COMPLETE

This is a far more complete volume of information than ever presented, and is absolutely invaluable to every executive, sales manager and purchasing agent.

### CONTENTS

Here is what you will find in this Directory of New York State Manufacturers.

1. List of 45,000 manufacturers, names of chief executives and purchasing agents.
2. Location of plants.
3. Description of products made.
4. Number of employees, male and female.
5. List of Public Utilities plants and their chief officers.
6. List of National, State and Savings Banks and Loan Associations.
7. Alphabetical listing of all municipalities.
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9. Fire insurance ratings.
10. Property valuation.
11. Tax rates.
12. Map of gas and electric utilities.
13. Map of canals and waterways.
14. Map of railroad facilities.

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There is Frigidaire Water Cooling equipment for every need. Efficient, dependable, economical. Investigate at once, and include Frigidaire equipment in your 1938 budget. For free survey and estimate see your nearest Frigidaire Commercial dealer or drop a line to Frigidaire Division, General Motors Sales Corporation, Department 81-10, Dayton, Ohio.





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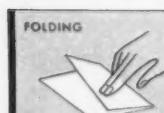
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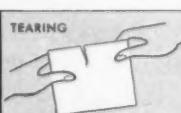
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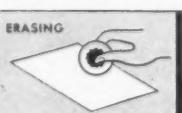
*Make these tests before you specify any paper*



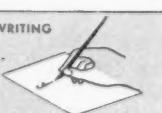
See if the paper can take it. Try folding both with and against the grain.



Judge strength by the resistance the fibres put up against tearing.



Dig in with an eraser and see how well the surface sizing stands up.



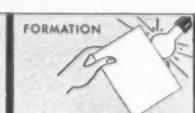
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George Hossfield, won the World's Typewriting Championship for the 10th time when he typed 139 net words a minute for one hour establishing a new world's record under Official International Contest Rules.

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RYERSON has always carried only the higher quality steels in every class. Now they accurately certify these steels and take a big step forward with a special plan for alloy steels.

Never before could you be sure how different bars of standard alloy steels drawn from warehouse stock would react to heat treatment. Bars of the same standard S.A.E. analysis might be from different heats of steel and vary greatly in hardening characteristics even though they were well within the range of the standard specification.

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# RYERSON

# Recovery---The Hard Way

**T**WO years ago the Brookings report—based on a most exhaustive survey of the national capacity to produce and to consume—pointed the conclusion that a lasting and well founded industrial system could be built only on a policy of greater production and distribution at lower prices. That solution presupposed an economic set-up in which large scale operations would reduce costs to an extent where they would approach—and presently come into balance with—an increased purchasing power resulting from more widespread employment.

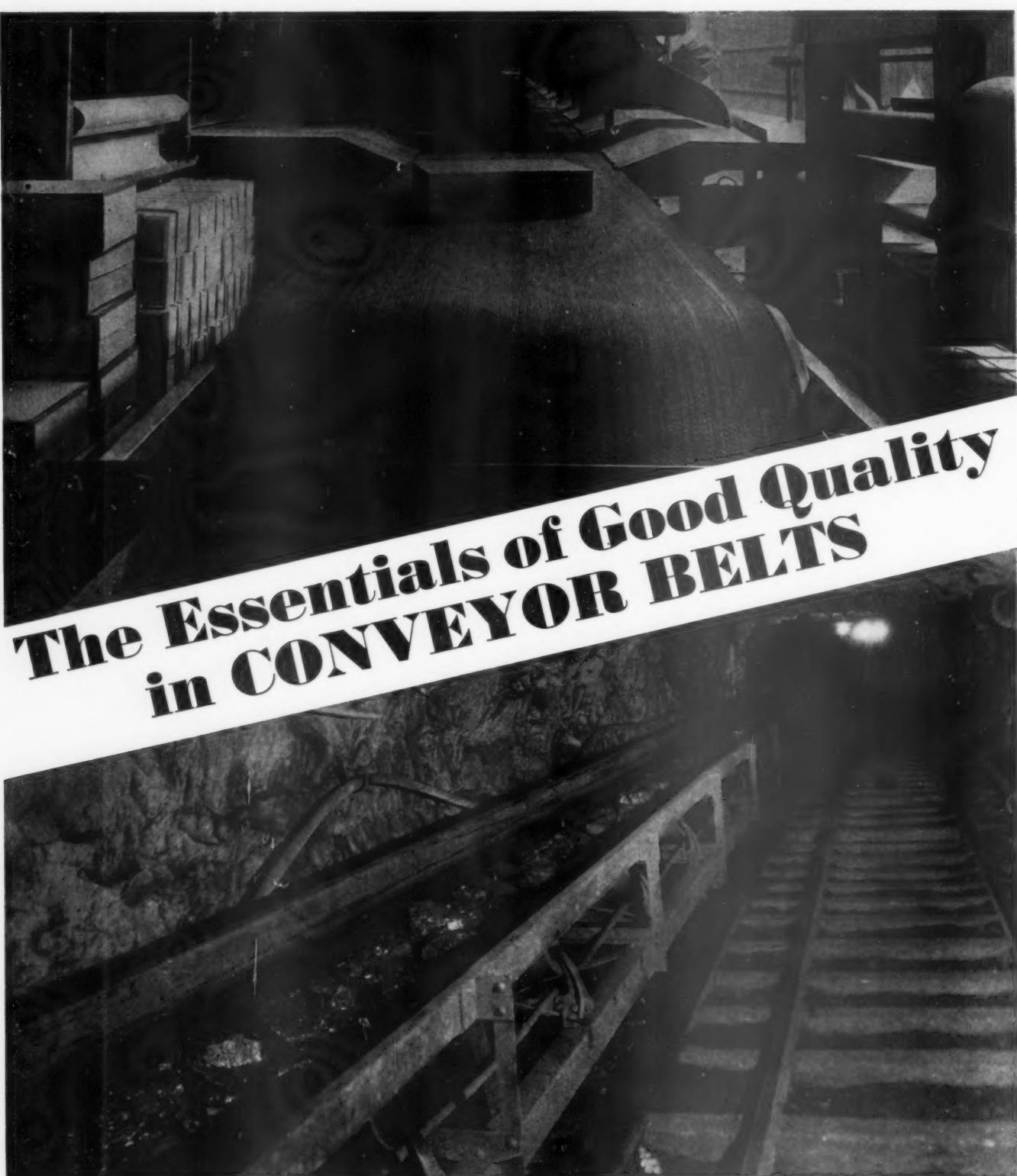
The business recovery that prevailed over the first half of this year was not attained by that formula. Production increased, and so did income. So likewise did prices, with the result that the effective purchasing power of the retail dollar is substantially less than at the time of the Brookings survey. Instead of better balance, we have been dealing with larger figures that are just as far out of line as ever. On that basis, demand cannot support the expanded production program. We are learning that today. Even in staple food items, least flexible in respect to quantity requirements, people are buying in limited quantities and the retailer is suffering despite his higher price scale.

Meanwhile the possibility of cost reduction has been jeopardized by the imposition of additional and rigid fixed costs in the form of increased taxes, higher wages, shorter hours, and other factors, which were capable of being absorbed while volume was rising but are seen as an impossible burden at the first natural recession. The current move to stimulate cotton goods trade through lower prices is made possible only through the lower price of the staple—at the expense of the grower rather than through the beneficial operation of economic processes.

Textile manufacturers are not alone in turning belatedly to a course that was charted for industry months ago. Another striking indication of policy trends is found in the general failure of producers to take advantage of the new resale price maintenance laws. To date this privilege has been invoked principally by the drug and cosmetic manufacturers and the book publishers—for years the leading proponents of such a plan. Few food manufacturers have taken the step, nor have the cigarette makers. Products making up the vast bulk of retail consumer purchases are still being distributed without resale price contracts. Among the major product groups, only the automobile industry is reported as entertaining serious consideration of the plan, and that in a rising market. Wherever consumer resistance to a high price level has made itself felt, there seems to be a distinct sentiment against obstructing outlet channels by such forms of price control. The need for wider markets, consistent with the practical capacity to buy, is clearly apparent.

With higher fixed costs, the underlying data of the Brookings recommendation may have to be revised, but it is still a sound economic plan. It will be more difficult to achieve today than it was two years ago, for there is little likelihood of an early withdrawal of the added cost factors. It is the hard way to recovery that is open now, but is the way that promises the surest and most permanent return to a balanced condition of active production and distribution.

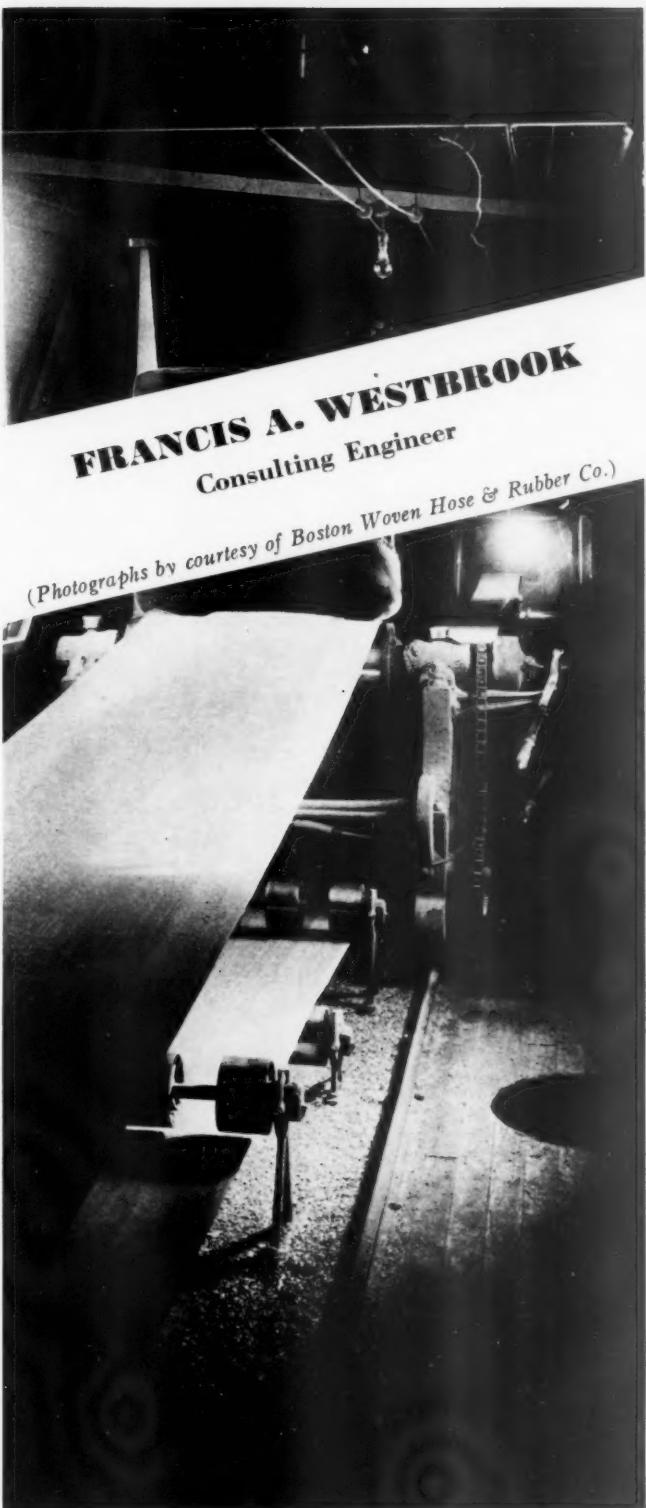
STUART F. HEINRITZ, EDITOR



## The Essentials of Good Quality in CONVEYOR BELTS

WHEN CONSIDERING the purchase of conveyor belts it is well worth while to conjure up a mental picture of the service conditions which they must meet before deciding what to buy. There are a good many different types of belts on the market and there is no use in getting one which is not designed to stand up under conditions to which it is going to be subjected, nor is there any point to getting one designed for heavy duty, and consequently expensive, when the service requirements are comparatively light.

The materials to be conveyed may be in the form of packages, in bulk, coarse or fine, wet or dry. They may be outdoors or indoors, travel fast or slowly, operate on a level, or up or down an incline. All belts have to withstand tension, which may be high if the line is long and the materials heavy, and they must all withstand continual bending around the end pulleys. Many belts must withstand a severe scouring action when carrying rough materials which are delivered to them by chutes, and under the same circumstances they are subjected to



heavy blows. For some services, as in the food industries, they must be made so that it is easy to clean them and keep them in good sanitary condition. There is also, of course, the wear due to the friction of the pulleys and rollers. These are some of the points which must be considered when ordering a belt, but there are a number of others, and one of the well-known belt manufacturers has developed a standard form (shown in Fig. 1) for its customers to fill out when asking for prices or recommendations.

Perhaps the best way to get a good idea of what constitutes good quality in conveyor belts is to explain how they are made. There are two general types of conveyor belts, known as rubber belts and canvas belts.

#### Rubber Belts

Rubber belts are made up of strips of duck impregnated with rubber compound. Duck is made of cotton threads, those running lengthwise being called the warp and those crosswise the filler. Each strip has pressed into it a soft rubber compound which is called the friction and which penetrates all the spaces between the threads. To make a belt, several of these strips, or plies, are placed together and are vulcanized under pressure, so that the finished product is a combination of fabric and rubber which is tough, strong and flexible. The degree of strength, of course, comes from the size of the threads of which the duck is made and the number of plies assembled together. There are also various grades of rubber compound, the better grades being called for on the more severe services. Rubber compounds suitable for withstanding temperatures up to 200°F are also available.

Let us consider for a moment the case of a belt for a conveyor which receives its load from a chute, goes up an incline, then along a level stretch, and is then unloaded by a traveling tripper. The change in grade means extra friction and tension from the pulleys required to deflect its course, and the lift means extra tension. The changes in direction mean that the rubber compound, or friction, must be very elastic, as well as strong, and must be moisture resistant if the conveyor is outdoors or the material wet. The outside covering which is in contact with the conveyed material must be thick enough and of such a composition as to withstand the wear and tear to which it is subjected. The same is true of the edges of the belt, which must have the rubber covering thick and strong enough to protect them from tearing. A straight level run of conveyor could have a belt with less plies, and a less expensive grade of friction.

In all of this, the duck which is used is of the greatest importance. It must be made especially for the purpose. That is, ordinary duck such as is used for sails and so forth, is more or less closely woven because the stresses to which it is subjected are in all directions. However, with belts, the pull is lengthwise, so that the threads composing the warp carry the load. They must therefore be close together. The filler threads should be comparatively far apart for two reasons. One is that space is needed for the impregnating friction and the other is that as the warp threads pass over and under the filler threads there is a tendency for the former to flatten out under tension and result in stretching. Thus the filler threads should be smaller than the warp threads as well as relatively far apart. This is known as "soft" duck. Duck is referred to in the trade by its weight in ounces per yard, 42 inches wide, as well as by the number of threads and strands per inch and the length of the cotton staple used for the threads.

Furthermore, the threads of both warp and filler should not be made of yarn which has been twisted too tightly, for it is essential that the rubber friction compound penetrate to the individual cotton fibers. In this way an elastic bond between fibers and threads is secured which allows them to move with respect to each other as the belt bends around the pulleys, and then to resume their normal relationship as it straightens out again. A good test, and a very simple one, is to tear off one ply and see how well the multitude of little sections of the friction at every opening between the threads of the duck hold and stretch before breaking.

Certain types of bucket elevators are actually nothing more than belt conveyors operating vertically, or nearly so, with buckets attached to the belt. This service is very severe for the belts, and they must be properly designed for it in order to give satisfactory results. The belts are subject to a tearing action from the bolts which hold the buckets to it, and as the belt usually passes through the material to be elevated there is likely to be a good deal of abrasive action from this direct contact. In other words, elevator service is in general more severe on the belt than conveyor work. In addition to this there is a loss of strength due to the holes punched in the belt for the bolt holes. Thus the duck should be woven to resist the tearing action of the bolts and there must be enough plies to make up for the loss in strength from the bolt holes. For this service a "hard" duck is mostly used.

It is also advisable, especially with thick belts for

elevators, to have the layer of friction between plies thick enough to form a skim coat over the fabric in order to provide plenty of rubber to take care of the distortion of the plies as they bend around the end pulleys, and to give better protection against the action of water and dirt which may gain entrance through the bolt holes or the cuts and bruises so likely to occur in elevator service.

In general terms it may be said that the construction of a belt for a given condition contemplates getting enough duck into it to deal with the maximum tensile stresses, without undue elongation and degradation of the cotton fibers, and then to protect the carcass with a wearing surface on top. The outside covers of friction compound for both conveyor and elevator belts depends as to thickness and quality on the character of the service. There is no point to having a cover which will outlast the body of the belt, but it is wasteful to have to junk an otherwise good belt because the cover has worn off. Covers from  $\frac{1}{8}$  to  $\frac{1}{4}$  inch thick (sometimes  $\frac{3}{8}$  and even  $\frac{1}{2}$  inch thick) are used for the handling of hot materials or hard lumpy materials and for short conveyors where the wear per foot from the loading chute is high. For grain conveyor belts, the cover need not be more than  $\frac{1}{32}$  inch thick because the service is not severe. For materials such as soft coal, which are only slightly abrasive, the cover should be from  $\frac{1}{16}$  to  $\frac{1}{8}$  thick, depending on the length of the belt and the method of loading and unloading it.

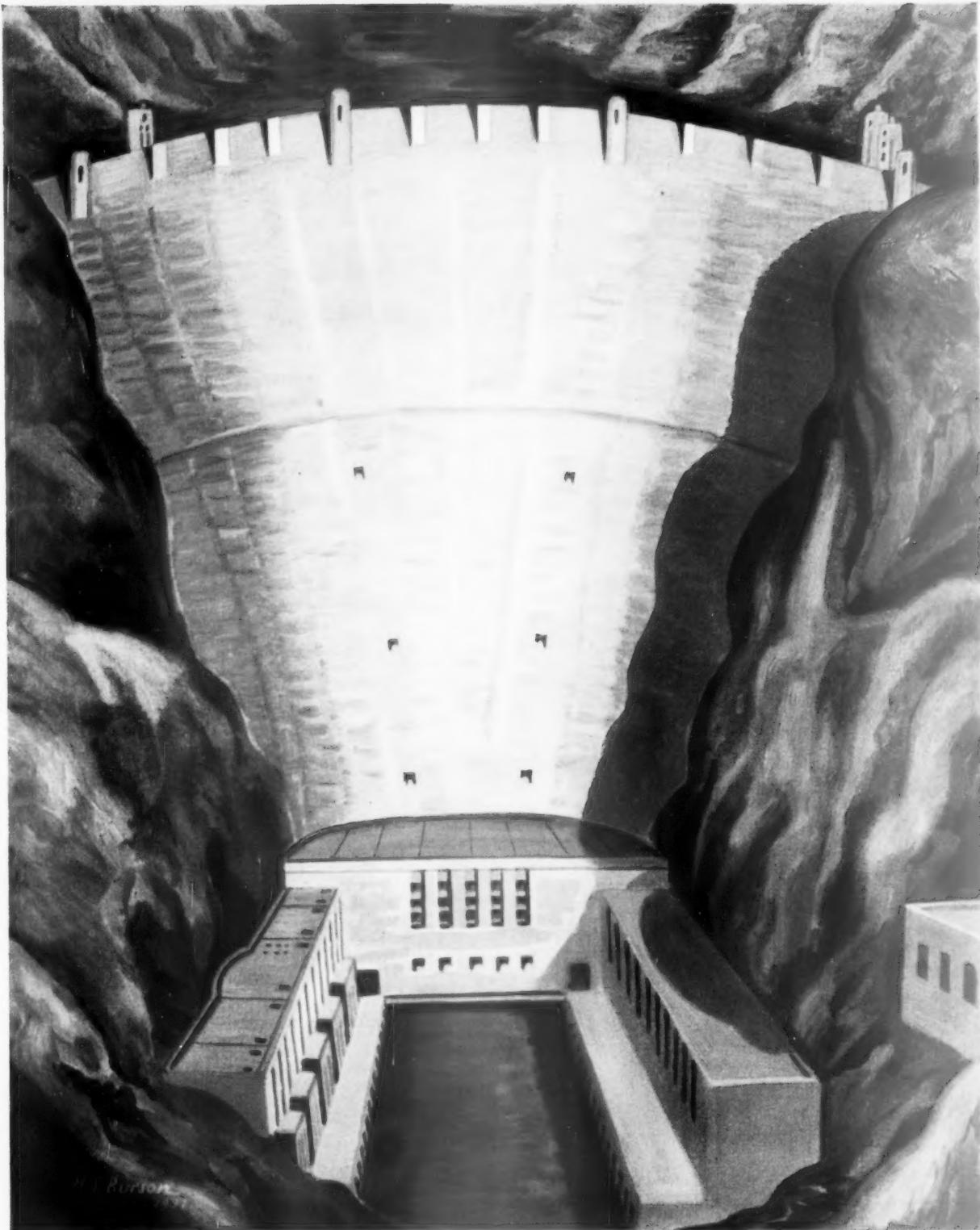
The thickness of the cover for the pulley side is from

IMPERIAL BELTING COMPANY ENGINEERING DEPARTMENT CHICAGO					
Conveyor Belt Information					
Size of our belt:	Brand	Length	Width	Ply	
Customer's Name		Date			
Address		Govt. for			
Salesman					
<b>CONVEYOR DATA—</b>					
Belt Speed P. P. M.		Hour Power to drive Conveyor			
Material, Kind		Temp. (degrees)			
Weight per cu. ft.		Weight per bushel			
Size of pieces: Average		Maximum			
Wet, Dry, Acid, Alkali:		Per cent of Moisture			
Capacity: Tons per hr. Av.	Max	Beltlets per hr. Av.			
Hours per day Conveyor is running					
Loading: Hopper, Spout, Automatic, Fender, Shovel or shovel on. Describe fully and sketch on back showing how material strikes belt and how far it falls.					
Discharge: Head end, Scraper, Tripper					
Tripper: Fixed, Movable, Automatic					
Dia. of Pulleys					
Is belt exposed to: Grit or Dust, Oils, Acids, Alkali, Fumes, Dampness, Water, Heat (Give Degrees)					
Underline which and explain on following lines					
<b>Mechanical Data—</b>					
Head Pulley: Dia.	Face	Crown or Flat R. P. M.	Lagged	C. I. Steel	
Tail Pulley: Dia.	Face	Crown or Flat R. P. M.	C. I. Steel		
Distance center to center Head and Tail Pulleys					
Is conveyor horizontal or inclined					
Vertical rise in feet					
Angle of Inclination, Degrees					
Drive is at Head, Tail, Intermediate					
If Tandem Drive give sketch on back of sheet					
Carrying Rollers: Troughed or Flat					
Give dimensioned sketch on back					
Spacing of Carrying Rollers					
Angle of Trough					
Return Rollers: Spacing					
Guide Rollers: Spacing					
Give Manufacturer and Type of Roller					
Take-up: Gravity or Screw					
Inches of Movement					
Inches of Bolt					
If conveyor changes its direction from inclined to horizontal does it have a conveyor roller or a large diameter pulley at the point where it turns or bridges?					
Diameter of bridge pulley					
Face of pulley					
Crown or Flat					
How close to the pulley are the troughing idlers on each side					
(OVER)					
Present Belt Brand Date Installed Condition of Belt Is service considered satisfactory					
Length					
Tonsage to Date					
Previous Belt Brand					
Length					
Tonsage Handled					
Width					
Kind of Fasteners					
Ply					
Give sketch of conveyor, carrying rollers and loading point and any additional information below					

Figure 1.

Complete information is essential  
to secure satisfactory performance

# A Great Engineering Achievement



Boulder Dam

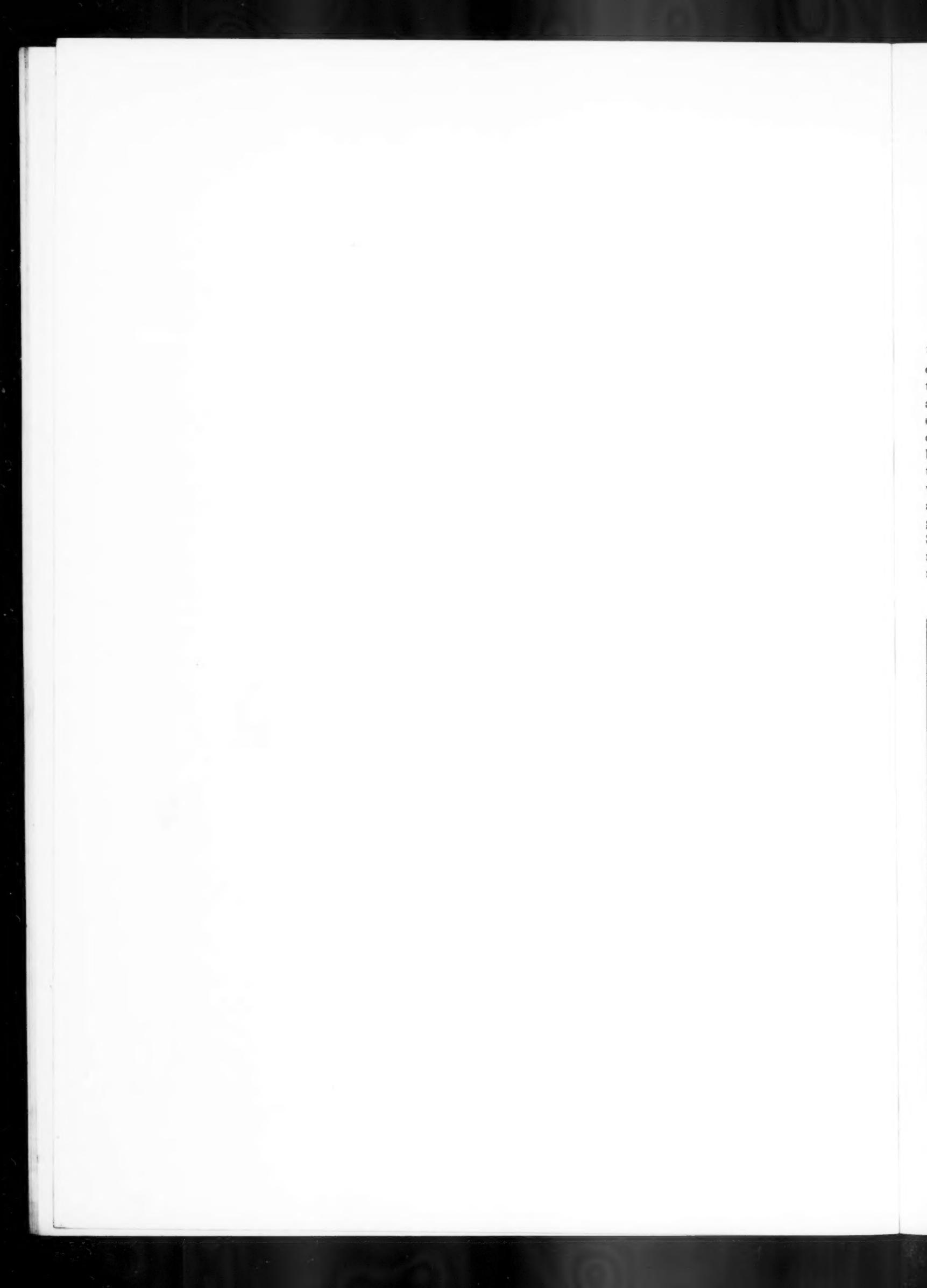
Never in the history of human progress has there been a more ingenious engineering achievement than the famous "Boulder Dam." Built in solid rock, with thousands of tons of concrete, reaching upward in fan-like splendor, this giant bulwark accomplishes the impossible, in harnessing the mighty Colorado River. Natural power once wasted, now serves a useful purpose.

"X-RAY INSPECTED" Alloy retorts, muffles, lead, salt and cyanide pots.

BOOTH NUMBER C-20  
NATIONAL METAL EXPOSITION

**THERMALLOY the "EYE" of QUALITY**  
**THE ELECTRO ALLOYS COMPANY**  
CASTINGS FOR HEAT CORROSION  
ELYRIA, OHIO

QUALITY CASTINGS SINCE 1910



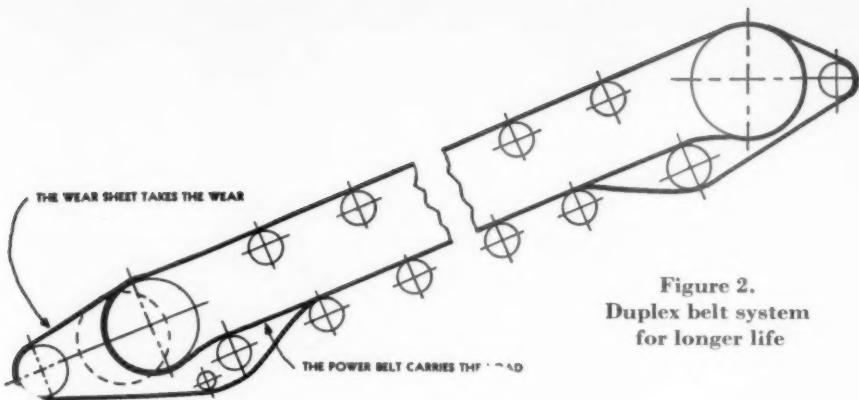


Figure 2.  
Duplex belt system  
for longer life

$\frac{1}{32}$  to  $\frac{1}{16}$  inch, although on heavy elevator services where abrasive material is likely to get between the belt and pulley a  $\frac{1}{8}$  inch cover may be economical. The rubber compounds of which the covers are made may be varied to meet different conditions, such as excessive abrasive wear, high temperatures, to resist acids and other chemicals. Many grades of compound are available. Some are remarkably successful in resisting mineral oils and others in resisting animal fats.

When we come to consideration

of service for high temperature materials we find it necessary to specify one compound for handling, say, lumpy material with considerable air spaces, and a slightly changed compound for handling fine materials which closely cover the belt and blanket it from contact with oxygen. The time in contact is also most important as no damage is done until the rubber cover itself is heated beyond the critical temperature. Temperatures of 300°F average are frequently met, and in some few instances much higher

temperatures have been handled with success, but such instances are decidedly special.

Other examples showing how belt covers are specially designed for a particular service are, for instance, in the food industries and in package conveying. For use in cannery factories, and other branches of the food industries, the tops may be white rubber compound so that any lack of cleanliness is immediately evident. For certain types of package conveying the top surface is left unfrictioned canvas to permit the belt to slide under the packages when they become jammed at the end of the line.

The following list gives the recommendations of one of the foremost rubber belt manufacturers for the most usual services for conveyor and elevator belts:

#### Conveyor Belts

For extremes of weight, abrasion and general hard usage in quarries and mines where the hardest and heaviest lump stone and ore are handled—

*Continued on page 57*

Use	Materials Handled	Usual Condition	Max. Temp. F.	Belt Treatment and Description	Remarks
FOOD STUFFS	Baked Goods, Dough, Flour, Candy, Sugar, Fruit, Vegetables	Sanitary Odorless Washable	Normal	Wax or Untreated Overcoat	Bituminous can be used for vegetables dumped on from steam cookers.
	Bone Char		600°	ABC (Asbestos)	
FRAGILE MATERIALS	Phonograph records, Delicate parts, etc.	Dry	Normal	Felt Face	$\frac{1}{8}$ " to $\frac{1}{4}$ " felt surfaced belt
FLAT OR SHEET GOODS	Veneer, Glass, Tinplate, etc.	Dry	Normal	Oil	Smooth, soft finish
GENERAL CONVEYING OF BULK MATERIAL	Ashes, Asphalt, Coal, Clay, Crushed Stone, etc.	Wet or Dry, Abrasive	Normal	Plain, Black, Red or Yellow Coating	
	Fertilizer, Lime, Chemicals, etc.	Wet or Dry	300°	Black, Red or Yellow Coating	
HEAT RESISTING	Cement Ores, Fullers Earth, Foundry Sand, etc.	Wet or Dry	to 300° over 300°	Bituminous	Acid and Alkali and Heat resisting
	Bottles, Cartridges, Radio Filaments, etc.	Dry, Hot	to 1200°	Heat Bituminous ABC Bituminous All Asbestos	
HIGH SPEED	Grain, Seeds, etc.	Dry	Normal	Main Grain	Hot conveying problems subject to special consultation
PACKAGED GOODS	Bags, Boxes, Cans, Cartons, Shooks, Paper Stock, etc.	Clean, Dry	Normal	Untreated, Wax or Oil	Very Flexible
		Wet, Dirty	Normal	Oil Black or Bituminous	
PRODUCTION WORK	Assembly Parts	Clean, Dry	Normal	Untreated, Wax	
	Metal Stampings	Clean, Oily	Normal	Plain Oil	
	Upholstery, etc.	Oily, Dirty, etc.	Normal	Oil	Red, Yellow or Black Coating

Figure 3. Canvas belt treatments for special uses.

*"If we would analyze why we do things the way we do them . . . as frequently and as seriously as we inventory the coal and lumber . . . we would be bigger men."*

# Taking the RUT out of ROUTINE

**T**O WORK IS A PRIVILEGE. The man out of a job may realize that, but how many persons who are regularly employed have such a concept of their task? Life may flow along too smoothly. A few rapids in the stream, or a little jolt to the road, or even a detour adds zest to the journey. The harder things of life, its uncertainties, its adventures, add flavor to experience. A straight road is easier to follow but much more tiresome. Complacency is a sort of fungous growth—or call it barnacles, if you please—that slows our progress. Dry docks for human beings would not be such a bad idea. Perhaps we have stayed at one job so long that we are afraid to reach out and try for a new one. A good stiff jolt may be disastrous to our ego but its after effects may prove exceedingly beneficial.

A purchasing friend of mine has related how, during the war, when there were scarcely hours enough in the day to accomplish the multitude of things demanding his attention, his staff undermanned, materials scarce, embargoes in effect, etc., *ad infinitum*, that one day the G.M. burst into his office, demanding the whereabouts of some very important forgings. The only reply was the familiar recital of unavoidable delays, broken promises and telegrams unanswered. "Well," stormed the G.M., "one thing is certain, you will never get those damn forgings sitting in that easy chair!" The buyer had thought he was too busy to leave his desk, but he did leave it, and his hurried journey to the mills in a distant city accomplished results. Not alone that, but somewhat to his surprise the job survived the shock of his being away.

Familiarity with our work may not breed contempt but it frequently has devastating effects on our initiative. Elbert Hubbard, who passed on to posterity some oft quoted statements about buyers in general, left us a further nugget of wisdom. Said he, "Do your work with your whole heart and you will succeed—there is so little competition."

Some people give the impression of being human dynamos in the amount of work they turn out and the volume of energy that they display. Others are smooth, suave and unhurried, but with an enviable record of accomplishment. We marvel at these differences in

**FRED G. SPACE**

Purchasing Agent  
Seymour Mfg. Co.  
Seymour, Conn.

character, although thoughtful reflection may awaken many pertinent questions. Are the duties of the one more arduous and does he need further recruits to his staff, or is he just naturally one of those busy bodies? With the other we wonder if he has some magic way of diverting his tasks and from his pedestal tell at a glance if his goods are properly purchased and his inventory in harmony with the market trend. After all this is a practical world and we may find that the secret of his clear desk is merely lesser tasks or perhaps longer hours. Much can be accomplished in that extra hour after the desks are closed and the telephone has ceased its clamour.

In the realm of football, lateral runs across the field may cover a lot of territory and yield but little if any gain. There is always the chance, however, that it may develop a better playing position. It is at least more desirable than persisting in some other line of play that has repeatedly proven unsuccessful. If versatility in attack and defense are desirable on the football field why not employ similar tactics in business?

A buyer cannot contact the trade year in and year out, particularly where his major purchases are in specified fields, without his way of doing things becoming reasonably familiar to most of his vendors. It is beside the point as to whether his methods may or may not be popular with his suppliers but if life is a game and business a major part of it, why not develop more originality in our dealings so long as we play according to the rules?

All of us know that the trader and trimmer type of buyer soon finds his moves carefully checkmated, whether he recognizes it or not. The over-trusting type who sometimes remind me of Webster and his "Timid Soul," although the species is extant in the field of purchasing, are exceedingly few. Such buyers may in a measure be popular with the sales fraternity but not very heavy profit producers for their companies. There is a tendency on the part of some people to as-

sociate a keen and analytical approach to the problems of buying with sharp practice. The buyer's prerogative to weigh and consider the offerings that come to him is frequently lost sight of. More than one sale has been lost because the vendor evidences poor sportsmanship. This would be a colorless and monotonous world if we all acted and reacted alike, and it is on the principle that we differ one from another that I offer the suggestion that we reflect and develop our own individualities in the field of business. Do it all within the rules of the game but not to a standard pattern.

If we would resort to a self-analysis as to just why we do the things in the way we do them at as frequent intervals and on as serious a basis as we inventory the bolts and nuts, or the coal and lumber in our own plants, it is possible that we would be bigger men as a result. One thing is certain, it would develop character, which has a way of revealing itself without any visible effort on our part. May I submit that no two characters are identical?

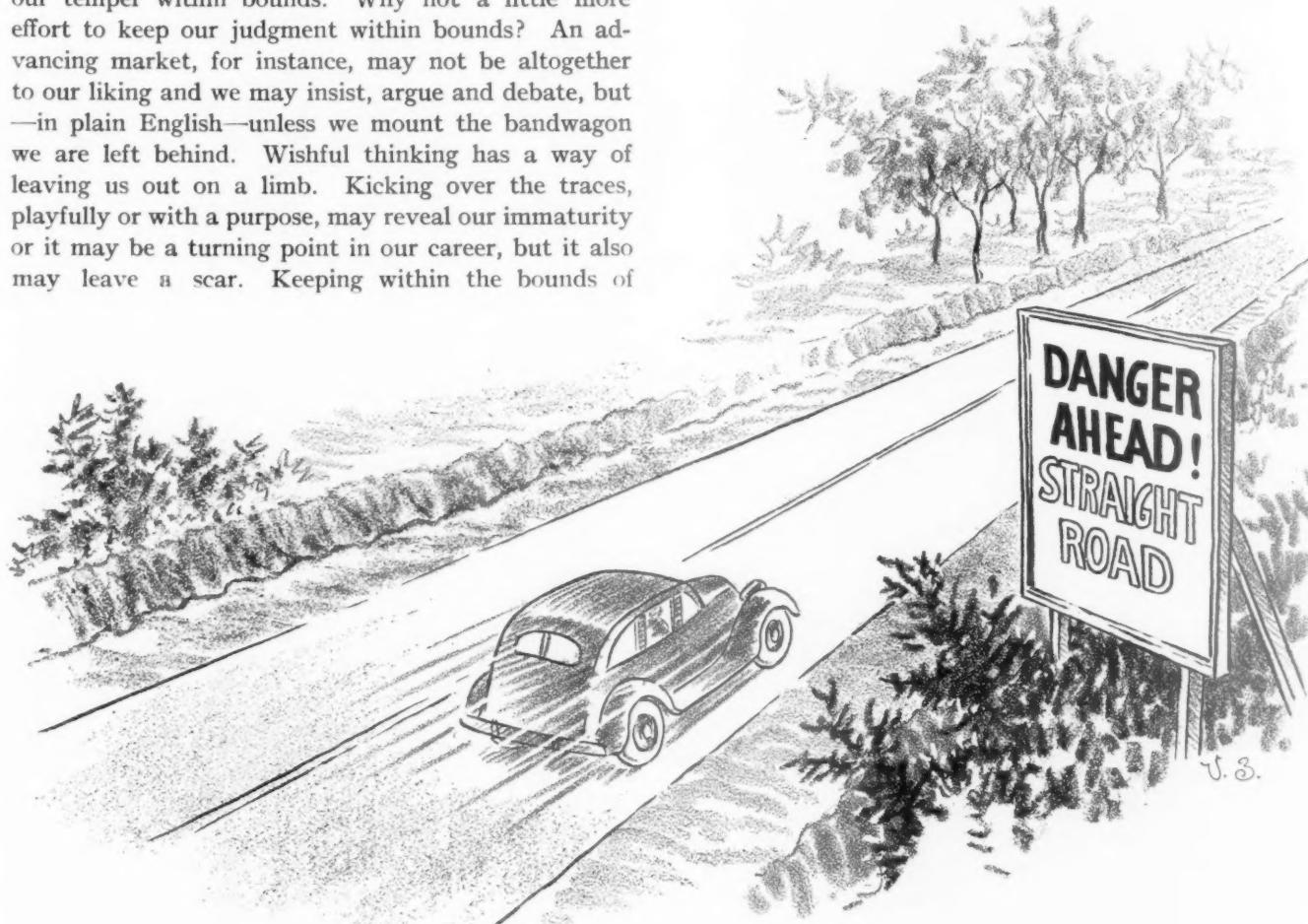
Again in the parlance of football, what can be more wasteful in time and effort than continually running the ball out of bounds? There is no gain and each attempt brings us back. It may be spectacular, but the measure of accomplishment is about on a par with the captive squirrel who dashes furiously around and around in his revolving cage. We are admonished to keep our temper within bounds. Why not a little more effort to keep our judgment within bounds? An advancing market, for instance, may not be altogether to our liking and we may insist, argue and debate, but—in plain English—unless we mount the bandwagon we are left behind. Wishful thinking has a way of leaving us out on a limb. Kicking over the traces, playfully or with a purpose, may reveal our immaturity or it may be a turning point in our career, but it also may leave a scar. Keeping within the bounds of

moderation may bring us to the goal more quickly. A driving, torrential rain is very revealing as to the power of the elements but it washes and gullies the soil, packs it down and runs furiously to the sea while a more gentle rain has a way of reaching to the roots of things.

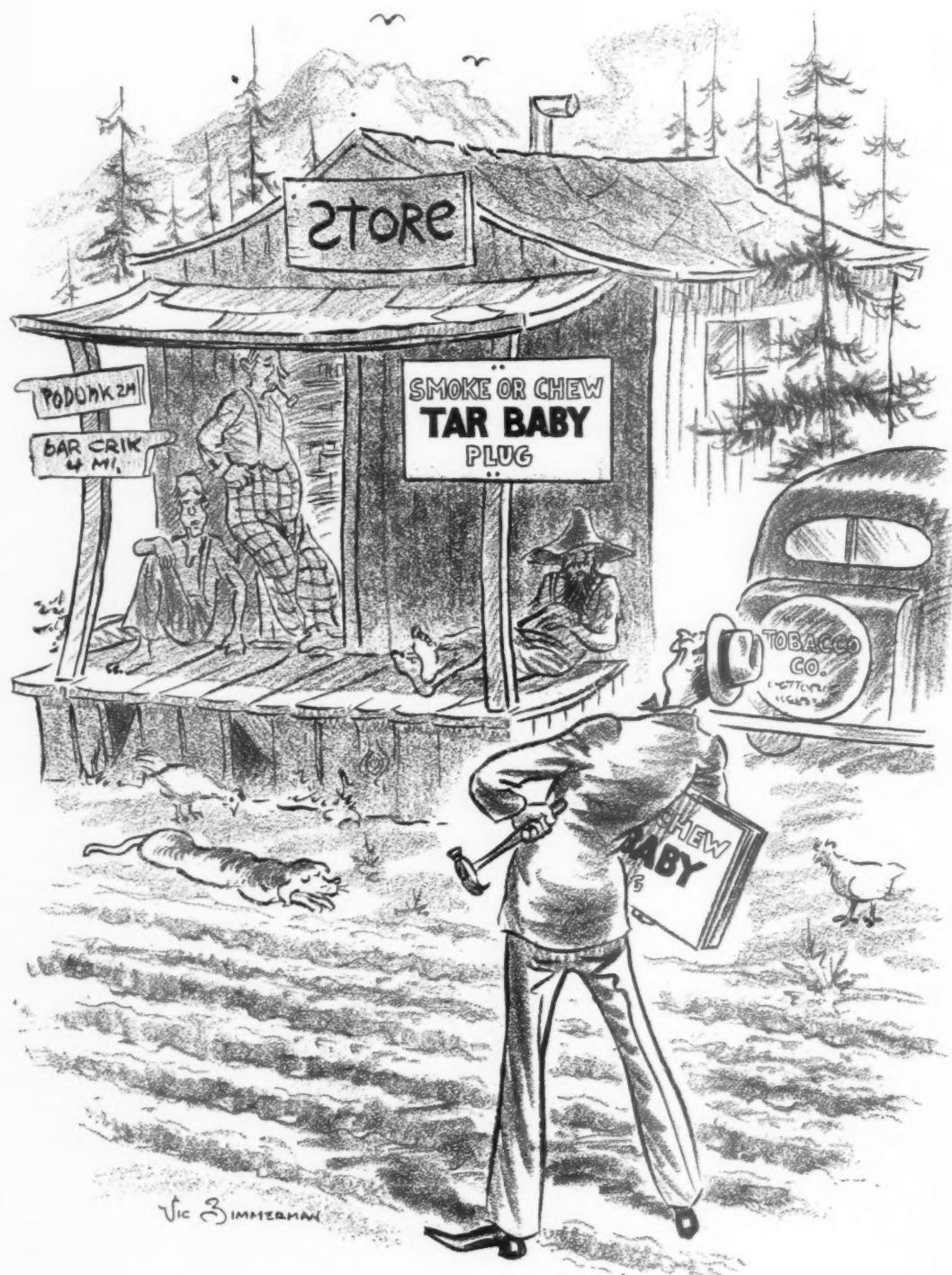
Hobbies, for instance, are as a rule highly diverting and much to be desired but even hobbies may carry us too far. Golf is a good thing, also membership in one or more service clubs, providing they do not acquire a monopoly of our time and thought so that the main tasks and purposes of our lives suffer thereby. Discipline may be unpleasant, but those of us who are fortunate enough to come under its rule and to feel its effects early in life may well testify that it at least keeps us within bounds. The necessity of discipline, by the way, does not cease when we have passed adolescence.

It requires discipline to think straight. To those of you who doubt this, just try devoting an hour some evening to quiet thinking on a particular subject and observe how far afield one can wander and to no particular purpose. As we grow we keep reaching out. That is the reason that biography is so fascinating. The career of a successful man is invariably thrilling and while this reaching out process so frequently calls for many detours, nevertheless when the last chapter is written we decide that his accomplishments were not

(Continued on page 44)



Too smooth and straight a road stifles initiative, growth and skill.



Salesman: "There! That's what I call complete national distribution."

# SILHOUETTE STUDIES

## 19: Clayton Giles Bunnell

SOME YEARS AGO, a middle western manufacturer of bakers' machinery had the bright idea of suggesting to a young man in the drafting room that he take a turn on the road as a bill collector. The youngster was personable, self-confident, and full of ginger. In his brief but varied business record there was a story of how he had once taken a swing at an officer of the company who carelessly used the "short and ugly word," had chased him all over the works, and then negotiated an honorable peace which left him still in good standing at his job. Altogether he seemed a likely fellow to get results on some of the more troublesome delinquent accounts.

The young man readily accepted the suggestion, and drew as his first assignment a particularly aggravated case. The customer had refused payment, he was rather vaguely informed, on the grounds that the machine didn't work properly.

He went to the customer and announced his errand. The answer was a lengthy tale of woe on the shortcomings of the equipment. His information regarding the customer's complaint had been somewhat of an understatement. The contention was not that the machine operated improperly; it didn't operate at all. He asked permission to look it over, and was taken out into the shop. There the story gradually unfolded in greater detail. The customer had elected to have his own master mechanic erect the machine rather than using the services of a factory representative. Several of the parts had been put in so that the motions were opposed instead of working together. There were even a few pieces left over; one of the most essential cutting devices had not been put on at all because the mechanic saw no reason for it.

The young bill collector called for a pair of overalls and a helper. He stayed on the job until the machine was set up as it should be, and until it turned out a thoroughly satisfactory product. Then he went back to the office and collected a check in full payment.

The incident is not especially significant as a milestone in a business career in which only a few weeks were spent at credits and collections. But it is an excellent illustration of several traits that characterize the man—his instinct for straightforward dealing, his constructive approach to a problem from its very fundamentals, his practical knowledge, his fair and reasonable attitude, and his capacity for getting results.

FOR NEARLY TWENTY YEARS those qualities have been successfully applied to purchasing, for one of the country's largest and busiest manufacturing organizations. Asked to express his philosophy of the buying job, C. G. Bunnell sums it up in a very few words: "Keep your cards on top of the table." And he expects the man on the other side of the table to do the same. He claims no special credit for this attitude, for his creed is definitely and inseparably a part of himself. It is reminiscent of Bobby Jones' famous remark when he called a penalty shot on himself in a championship match: "It isn't a case of sportsmanship; it's simply refusing to cheat."

"Bun"—to use the informal and affectionate name by which he is universally known—was born in Elmira, N. Y., on May 14, 1875. He comes of good American stock. His parents implanted deeply in him a sound appreciation of the responsibilities of good American citizenship—the doctrine of useful work, rugged self-respect, cooperation, and the helping hand.

After attending public and high schools in that city, he landed his first job as an apprentice draftsman with the Payne Engine Company. D. W. Payne was a West Pointer. He put the boy through a rigorous course of training, taught him the fundamentals of engineering mathematics, supervised his progress from blueprint boy up to the point where he was permitted to make tracings, drawings, and elementary designs. "Bun" learned a lot, and he stayed with the company until it went out of business.

Then came a number of years in which he followed the career of a "traveling draftsman." This phase of his experience took him over a wide sector of the country as he went from one job to another. But unlike many others engaged in that wandering craft, he always had a new job and a better one before he moved along. The only time he was "fired" was on the occasion when he taught his boss to be more careful in his choice of epithets, and in that case he saw to it that he was properly reinstated before he resigned in good order.

A BRIEF RESUME of the experience he acquired during these years shows a varied and well rounded record. He worked at steam engine design in Elmira. In Chambersburg, Pennsylvania, he became familiar with hydraulic machinery. At Wilmington, Delaware, he designed machine tools.

Next he went to Brooklyn, New York, and did a considerable amount of original work on complicated special machinery for the tobacco and cigarette industry. Here he participated in the design of the first commercially successful cigar rolling machine. His first experience with electrical equipment was with the Western Electric Company in Chicago. This was followed by a turn at bakers' equip-

ment at Saginaw, Michigan, the scene of his brief interlude as a collector. Back to the east again, he worked at electrical design with the Crocker-Wheeler Company of Ampere, New Jersey.

From Ampere, Bunnell went to Pittsburgh on June 1, 1905, to join the staff of the Westinghouse Electric and Manufacturing Company. It must have been apparent to him then that he had found his proper niche, for the compelling urge to move along no longer asserted itself. In December of that year he revisited Saginaw to claim as his bride Miss Maude Ward of that city. They established their home in Pittsburgh, and for thirty-two years "Bun" has worked amid these congenial surroundings, earning steady advancement to his present position of influence and responsibility.

His first job with Westinghouse was in the drawing room of the Industrial Engineering Department. A little later he was transferred to the General Engineering Department, and then to the Sales Department.

During the World War, another phase of the business temporarily assumed major proportions and importance. Bunnell was placed in charge of ordnance and shell contracts, and carried out this assignment in a highly successful manner for the duration of the emergency. It was after the war that he got into purchasing work, as buyer of machinery and equipment. He continued in that office until his appointment as purchasing agent for the East Pittsburgh Works, where his abilities found wider scope. The natural sequel to this record was his subsequent selection to direct the purchasing activities of the whole organization, as General Purchasing Agent for Westinghouse, the position which he now holds.

**H**E BECAME A MEMBER of the Purchasing Agents Association of Pittsburgh in 1924. The constructive and cooperative nature of this professional activity, its objectives of higher standards in buying, appealed strongly to him, and he

soon became a prominent figure in local and national councils. Judicial by nature and unhurried in making a decision, he is a forthright and vigorous advocate of the principles in which he believes, a tireless worker, and a natural leader who commands the respect and loyalty of his co-workers.

He served successively as director, vice president, and president of the Pittsburgh Association, as national director, and as national vice president for District No. 6. His personal interest in association affairs has not abated since his term on the national executive committee. Though he prefers now to remain in the background, he is a pillar of strength in the organization and is at present on the board of directors of the Pittsburgh chapter. He has presented several important papers at the national conventions and is a conscientious and effective committee worker. One of his most recent assignments has been to represent N.A.P.A. on a Simplified Practice committee of the National Bureau of Standards.

**T**HE CHARACTER of Bunnell's leadership is unusual. Short and compact of build, courageous and positive in action, it is easy to understand his continuing interest in strenuous sports such as baseball and football, which he played in school days. He has the good competitor's faculty of looking forward instead of back, and has little thought for the past except as it may enable him to steer a better course in the future. But he has nothing of the domineering or ruthless self-assertiveness that is frequently associated with these characteristics. Balance is his guiding trait, and cooperation his aim. He thinks of success in any undertaking as a group achievement, and insists that the credit must go to the group.

Behind a manner that is sometimes inclined to be on the gruff side, those who come in contact with him—whether socially, as co-workers or subordinates, or in the normal course of business—are quick to recognize his fair and sympathetic nature, and respond to it. Men

quickly learn to accept him, without question, at face value.

**I**NHERENTLY SOCIALE and interested in people, his home is known for its genuine hospitality, and his circle of friends is a wide one. One of his chief interests is in seeing that boys and young men are started right as they set out to take their part in the work of the world. In his own business, he makes it a point that the newcomer in his department is thoroughly informed as to his concept of the purchasing function and its place in relation to other divisions of the company, and is imbued with his own high standards for the conduct of the work. Outside of the office, that interest is shown by his services on the board of directors of the Boy Scouts of America.

Prior to the Pittsburgh convention of N.A.P.A. last spring, Bunnell was appointed chairman of the committee on the Shipman Medal Award, the highly prized symbol of recognition for outstanding service to the purchasing profession. Quite properly, the honor and the plaudits go to the medalist himself on such an occasion. But to many who saw "Bun" make the presentation to Ed Gushée at the banquet session, and concurred in the eminent wisdom of the committee's choice, the thought occurred that in another sense his part in the ceremony, and the responsibility which it represented, provided a comparable tribute—the expression of his purchasing colleagues' complete confidence in his understanding, judgment, and integrity.

—S. F. H.

## National Income Up

The Department of Commerce reports national income for 1936 as 63.8 billion dollars, a gain of 16% over 1935, and the largest improvement, both absolutely and relatively, for any year of the recovery period. The net value of goods and services produced in 1936 was 61% greater than the 39.5 billion dollar total of 1932, the low year of the depression.

# How N.Y.U. Buys

*Efficient buying procedure under a strict system of budgetary control in which no account may be overdrawn*

NEW YORK UNIVERSITY has for more than a century ranked among the country's leading educational institutions. The University Heights section of the Bronx takes its name from the 120-acre campus of the College of Arts and Science, Aeronautics and Engineering. Here also is the Hall of Fame, commemorating the leaders in many phases of American life, its colonades commanding a broad panorama of Manhattan's towers, across the Harlem River, and the Palisades, across the Hudson.

But in meeting the educational needs of the world's largest city and commercial center, the University has expanded greatly in size and scope. Its total student enrollment is now around 45,000, with a faculty of 1800, exclusive of the administrative staff. Business studies hold an important place in the new curriculum; there are colleges of medicine, dentistry, architecture, and applied arts. The classroom has been brought into the heart of the city, until the violet flag of the University flies today over a dozen building groups, from the Heights down to the Wall Street Division, almost at the southern tip of Manhattan.

Among these various centers are the Graduate Department of Fine Arts, on Madison Avenue; the School of Architecture and Allied Arts, occupying three floors at 40th Street and 6th Avenue; the Medical College, on 1st Avenue from 25th to 28th Street; the Dental College on 23rd Street near 3rd Avenue. Washington Square, where Greenwich Village and 5th Avenue meet, is the original site of the University, which now occupies the entire two blocks along the eastern side of the

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in a series of case studies outlining the actual organization and procedure in representative purchasing departments.

public park. There are dormitory buildings to the south, and to the north is housed the newest venture in Adult Education, which is successfully filling an important place in the new, complex urban life of busy people who feel the need and the urge for a continuation of organized study. The School of Law, the School of Education, and Washington Square College are also located here. The School of Commerce has its center at the Square and in the Wall Street Division.

### Budgetary System

The annual budget for this extensive and diversified plant amounts to seven and a half million dollars, of which about one and a quarter millions are expended through the purchasing department. The necessity of keeping strictly within budgeted funds, as well as general efficiency of administration, led to a complete centralization of purchases in 1922. The purchasing plan is closely tied in with the system of budgetary control. Every dollar spent for materials and supplies throughout all the various colleges and departments, including alterations and maintenance in the existing plant, clears through the purchasing office.

The fiscal year of the University begins on July 1st. Prior to that

time, each department head or chairman submits to the Dean of his school a detailed budget of his requirements for the year. Any large items of equipment are specifically mentioned in this estimate, while supplies of a general nature are grouped under appropriate headings. The Dean turns over the total requests for his College to the Chancellor, who presents them in total to the University Council (corresponding to a Board of Trustees or Directors) for approval or revision. When favorable action has been taken, a credit is set up with the Auditor, identified by an account symbol for each department, and the department head is notified as to the amount at his disposal. Only then can he originate requisitions against the appropriation.

### Purchase Organization

The purchasing department offices are located at Washington Square. The department is headed by Theodore M. Johnson, Supervisor of Purchases, who reports directly to the Comptroller of the University. He has charge of the general departmental administration, and the Dental College bookstore, and handles the contracts for major items such as coal, paper, and glassware, also contracts for building alterations.

There is an Assistant Supervisor of Purchases, who purchases building materials, maintenance, and laboratory supplies, and a buyer, who purchases equipment for the medical and dental schools.

The departmental staff includes eight clerical and secretarial workers, one of whom is in charge of follow-up and invoice checking.

Central storeskeeping is not a major factor, for a number of reasons. The diversity of items does not lend itself to quantity storing. Deliveries of most purchases are made directly to the requisitioning department. The metropolitan location makes it possible to depend largely on dealers' stocks. Consequently the central storeroom is chiefly confined to stationery stocks and furniture. The storekeeper reports to the Supervisor of Purchases.

#### Personnel

Mr. Johnson, Supervisor of Purchases, is a graduate of the University, receiving the degree of Bachelor of Commercial Science in 1922. During his undergraduate course, he served for more than three years as night cashier, earning a considerable share of his college expenses by this work. Graduating just at the time when the policy of centralized purchasing was decided on, he was asked to head the new department, and has remained in that office ever since. Under his guidance, it has grown from a one man job to the present complete and efficient organization. For seven years he was also assigned as instructor for the University's course on purchasing.

Mr. Johnson has been active in the New York Purchasing Agents' Association, where he has served as a member of the executive committee, and in the National Association, where he has been a leader in the work of the Educational Committee. He is a past president of the Educational Buyers Association, which includes in its membership the purchasing executives of more than three hundred colleges and universities throughout the country. Since 1930, he has been secretary-treasurer of that organization.

E. H. Eisenhardt, Assistant Supervisor of Purchases, is a graduate of the University in the class of 1937, and brings to the work extensive experience acquired as an assistant in the purchasing department of the Fuller Brush Company at Hartford, Conn.

George Dietrich, Buyer, is also a graduate of the University, in the

class of 1936. His experience in the organization includes undergraduate service as manager of the bookstore at the Dental College, which comes under the supervision of the purchasing department.

#### Requisitions

Purchase requisitions originate with the heads of the various departments, as indicated above. The requisition form (which is furnished also in the half size  $8\frac{1}{2} \times 5\frac{3}{4}$  for single item orders) is in triplicate. It requires approval by the Dean of the particular college. When that approval is secured the original and duplicate (blue) are passed along to the purchasing office. The triplicate (yellow) is retained as a departmental record.

The requisition form is very specific in stating that it is not an order, and that orders may be issued only through the office of the Supervisor of Purchases. In the section noting the date when supplies are wanted, the requisitioner is warned in bold type: "Please avoid rush orders!" There is a space for a number, which may or may not be filled in, at the option of the requisitioning department, as this is used only for their own records.

When the requisition is received in the purchasing office, the first step is to assign a requisition serial number, which thereafter identifies the transaction in the purchasing and accounting records. This is indicated in the lower right hand corner. This number is then entered in a requisition register, arranged by departments, corresponding to the budget accounts. The register records merely the number, the date of requisition and date received, and the identifying number assigned by the requisitioning department. This record serves to collate all requisitions issued against each budget account and as a quick reference in the event that a question or follow-up is directed to the purchasing department regarding any requisition.

Twice a day, the accumulated requisitions come to the desk of the Supervisor of Purchases. In this way he is constantly in touch with

what is being asked for. It is within his province to question a requisition as to quantity requested, whether a particular purchase should be deferred, or any unusual features. In this case it is referred back to the originating department for further consideration or is ruled upon by the Comptroller.

Having gone over the complete list of requisitions, the Supervisor retains those on which he is to handle the purchasing and passes the rest along to the Assistant, who in turn selects those coming under his jurisdiction and passes the others on to the Buyer.

#### Authority to Purchase

The next step is to price each requisition. This may be a routine matter, based on the past purchase record, on an existing contract, or on filed price lists. It may call for competitive bids. These are secured on a regular quotation form if time permits, by telephone in the case of rush requirements. The latter contingency has largely been eliminated through a process of education and constant reminder.

The request for quotation has one unique feature that has been worked out in conjunction with the legal department. It is phrased so that the quotation is actually an offer, valid up to a stated date. Then a purchase order issued against that offer is actually an acceptance, constituting a contract without the necessity of a further acknowledgment by the vendor, though an acknowledgment is requested to show receipt of the order. There are spaces for nine items on this form, and continuation sheets with spaces for sixteen additional items can be made a part of the form as required.

Twice a day, after the estimated cost has been properly entered, the requisitions are sent to the Auditor's

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#### Index to Forms on Opposite Page

1. Requisition
2. Requisition Register
3. Request for Quotation
- 3a. Continuation Sheet
4. Purchase Order
5. Purchase Order Register
6. Past Purchase Record

NEW YORK UNIVERSITY  
**PURCHASE REQUISITION**

To THE SUPERVISOR OF PURCHASES:

- Please order the following items for the Department of \_\_\_\_\_.

To be delivered at \_\_\_\_\_.

No. \_\_\_\_\_

Date \_\_\_\_\_

Date Wanted \_\_\_\_\_

*Please avoid rush orders!*

Head of Department \_\_\_\_\_

Approved by \_\_\_\_\_

Catalog Number	Quantity	ARTICLE—Give Complete Specifications	Estimated Cost	Budget Code Number
		<b>I</b>		

All supplies and materials must be ordered through the office of the Supervisor of Purchases

**THIS IS NOT AN ORDER FORM**

See back page

For use of Purchasing Department only	
Ordered from _____	(Address) _____
Confirmation order no. _____	
To be delivered _____	
F.O.B. _____	To be shipped by _____
Terms _____	Special Condition _____
Requisition No. _____	

ORIGINAL PURCHASE ORDER	NEW YORK UNIVERSITY 100 WASHINGTON SQUARE EAST NEW YORK CITY			ORDER NUMBER  THIS NUMBER MUST APPEAR ON B.L. DOCUMENTS AND INVOICES.
DELIVER TO ADDRESS ATTENTION OF				DATE
VENDOR				SHIP VIA
				F.O.B.
<b>TERMS</b> UNLESS INDICATED OTHERWISE THE CONTRACT ON YOUR INVOICE IS AS FOLLOWS: TOTAL AMOUNT DUE AND PAYABLE IN CREDIT FIFTH OF EACH MONTH.				
<b>PLEASE SEND INVOICES IN DUPLICATE TO THIS OFFICE</b>				
<b>PLEASE SUPPLY THE FOLLOWING SUBJECT TO CONDITIONS BELOW</b>				
ITEM NUMBER	QUANTITY	DESCRIPTION	UNIT PRICE	TOTAL
				
<b>CONDITIONS</b>				
<p>NO CHARGES ALLOWED FOR DESIGN, CREATING, PACING OR CARTAGE.      QUANTITY AND DESCRIPTION OF EACH ITEM MUST BE STATED FIRST BEING GIVEN VR.      BILL PRICES AND F.O.B. DESTINATION UNLESS OTHERWISE SPECIFIED.      SIGHT CREDIT TERMS ARE GRANTED. A 2% DISCOUNT IS ALLOWED FOR PAYMENT TO OBTAIN CASH DISCOUNT.      ORDERS REJECTED ON ACCOUNT OF INSUFFICIENT QUALITY OR MISERMADE WILL BE RETURNED TO YOU WITH CHARGE FOR TRANSPORTATION BOTH WAYS.      DUE TO THE POLICY OF THE UNIVERSITY, NO CREDIT IS ALLOWED FOR DEFECTIVE MATERIAL OR DEFECTIVE WORK.      THE UNIVERSITY IS NOT RESPONSIBLE FOR ANY DAMAGE WHICH MAY OCCUR IN TRANSIT.      THE UNIVERSITY IS NOT RESPONSIBLE FOR ANY CLAIMS WHICH MAY BE MADE UNDER THE PATENT LAWS OF THE UNITED STATES ON ACCOUNT OF THE MANUFACTURE, SALE OR USE OF THE ARTICLE PURCHASED.      YOU ARE TO ASSUME ALL LIABILITY FOR ALL DAMAGE OR HARM, INCLUDING DEATH, CAUSED BY OR TO YOUR WORKERS WHILE BREAING IN THE EX-      ECUTION OF THE CONTRACT.      THIS ORDER IS ACCEPTED IN ACCORDANCE WITH CONDITIONS OF SALE REFERRED TO IN THE CONTRACT.</p>				
PLEASE ACKNOWLEDGE RECEIPT OF THIS FORMAL ORDER NEW YORK UNIVERSITY				
PRO. NO. _____			SUPERVISOR OF PURCHASES	

office. There the estimate is checked against the appropriate departmental budget account, which is indicated by a code number. A running balance of each account is maintained, one staff member devoting part time to this record, and the work is facilitated by means of a Hollerith tabulating machine. When the Auditor ascertains that budgeted funds are available for the purchase, he returns the white original of the requisition to the purchasing office, retaining the blue copy for his own record, and debiting the commitment against the account.

Not until the white copy is returned, signifying approval for funds, does the purchasing department actually issue an order. Consequently, no budgeted account is ever overdrawn. The procedure can be expedited in an emergency, by getting the Auditor's approval by telephone, citing the amount, department, and budget code number, but the regular routine is followed nevertheless, in confirmation and for purposes of record.

#### Purchase Order

The purchase order can be promptly issued, since negotiation and pricing have been previously completed. The form follows generally recognized arrangement and terms. It carries a number corresponding with the requisition number, and refers to the vendor's proposal for reasons detailed above. While delivery is made direct to the using department in most cases, invoices in duplicate are requested to be sent to the purchasing office. About twenty thousand orders are issued per year.

There are six copies, made out on a fanfold machine. All are on white paper, but they are distinguished by the color of the printing (black, brown, violet, blue, orange, green) as well as by the printed designation—*original, duplicate, triplicate, etc.*

The original is sent to the vendor.

The duplicate is used in the purchasing department for purposes of follow-up and also in checking invoices. A special tabular form is

set up on this copy for the invoice record.

The third copy goes to the receiving clerk. This may be the person originating the requisition or, in some cases where a storeroom is maintained or where a bookstore manager or other employee has time to handle incoming packages, one individual may be assigned to do the receiving for an entire department or college unit. When partial deliveries are made, a special memorandum is sent to the purchasing office. The triplicate copy itself is returned when all material has been received.

The fourth copy goes to the originator of the order as a permanent record of the purchase.

The fifth and sixth copies are record copies in the purchasing department, filed to provide a cross-index by serial numbers and by the vendors' names.

As issued, purchase orders are recorded in a register which consists of a mimeographed sheet, with columns for entering the order number, date, company, contents, and requisitioner.

#### Past Purchase Record

The principal record maintained by the purchasing department is a visible index of commodity items, on which all past purchases are entered. It is subdivided by commodity classes, so that all glassware, plumbing supplies, etc., are found together, and arranged alphabetically within these groups.

At the head of the card are numbered spaces for the names of eight vendors. Each purchase is then entered, with columns to show vendor's number symbol, date, order number, quantity, price, unit, discount, terms, f.o.b., department for which the purchase was made, and remarks. This record is extensively used in pricing standard items, and provides a quick and accurate indicator of trends in use and price. There is no entry of receipts, issues, and balance in stores. This is handled individually by departments, and on standard stores items the running inventory is kept in the stockroom.

The Supervisor of Purchases also has a periodical recapitulation of the purchases against each departmental appropriation, drawn up to show a comparison with the corresponding period of the previous year and indicating in a general way the progress of the annual purchasing program.

#### Contract Policy

On major items of fairly general application, it has been found advantageous to enter into contract agreements. About sixty such contracts exist. It is the policy of the department to issue such contracts for specific amounts and specific periods, rather than the looser "requirements" type. Quantities can be quite closely estimated in advance, but in actual practice there is considerable flexibility allowed, since a reasonable leeway in either direction is construed by vendor and buyer as coming within the scope of the agreement.

One other form of contract deserves mention. As noted earlier, building alterations come under the jurisdiction of the purchasing department. On such a requirement, not only are general proposals invited, but the various subcontracts as well are made the subject of competitive bidding. Thus the Supervisor of Purchases himself is in the position of a general contractor with a competitive estimate on the complete job. It frequently happens that his bids on the various component parts of the job offer enough economies to warrant handling it in this way. In other cases, a general contract may be let.

#### Special Purchases

It is to be expected that in purchasing for the many technical and scientific divisions, some unusual requests come to the buyer's desk, involving more than ordinary attention to locate a source of supply and equipment of the required quality. There is the further complication of technical vocabulary, which frequently makes it desirable for the Supervisor of Purchases to interview the requisitioner in person as the first step in determining what is



T. M. JOHNSON

actually wanted. Thus a rather inexplicable request for an "incubator" turned out to be an elaborate air conditioning job, to produce a room in which temperature and other atmospheric qualities could be held at a very uniform level for an important series of experimental processes.

Usually a talk with the requisitioner also gives the best clue or starting point in finding where new and unusual items may be obtained, for the idea may have originated from some scientific paper or follow the suggestion of a fellow scientist in some other institution. From such a reference it is possible to get at least one source of supply.

Since it is the policy of the department to get competition on all major expenditures, a frequent practice is to have the manufacturer in such an instance prepare specifications detailing what he proposes to furnish, and to submit these specifications to other manufacturers for comparative offers. Rec-

ognizing the ethical proprieties in such a procedure, the department exercises special care to keep the entire transaction on a clear and open basis. The original manufacturer is fully informed on what is to be done, and why. In the majority of cases vendors welcome the assurance that all competitive proposals are to be on identical equipment, rather than running the risk of having their product compared with an inferior installation, on price alone.

Other complications are likely to arise. For example, much of the technical research necessarily deals with unknown factors, and consequently the purchase of materials and equipment, often quite elaborate in nature, may be experimental as well. A recent example involved a considerable expenditure for a device which, though completely satisfactory so far as the specifications were concerned, failed to accomplish the results for which it had been intended, and the purchasing department was asked to secure permission for its return after sixty days of trial and use. While such a procedure is contrary to all commercial custom, it is representative of one type of negotiation which this purchasing department is called upon to undertake in providing an efficient procurement service.

#### Miscellaneous Policies

The purchasing department has the complete cooperation of all University officers in insisting that all purchases be made through the office of the Supervisor. Some difficulties were encountered during the early days in persuading men, who were accustomed to do their own ordering, of the wisdom of such procedure. However, by consistently and conscientiously showing a desire to procure exactly what was needed, in accordance with the technical man's specification, and by demonstrating the possibilities of extending the effectiveness of a fixed budget through expert specialization in buying, an unusual degree of confidence has been earned. Today the technical men are quite willing to delegate the commercial

part of the transaction to the purchasing department.

On non-technical equipment such as desks, chairs, lockers, etc., the purchasing department has had virtually a free hand, and substantial progress and economies have been made in standardization.

Personal purchases for faculty members, utilizing the contacts and resources of the purchasing department, amount to a considerable volume. While this practice is not actively encouraged, it is accepted as a legitimate function of the department, on the principle of extending the real income of the teaching staff, who traditionally work on a lower salary scale than in the industrial field.

It has been mentioned earlier that the opportunity for quantity purchases is relatively limited. The University, operating in conjunction with many other educational institutions throughout the country, has met this situation by the pooling of similar purchases, principally through the agency of the Educational Buyers Association.

Purchasing for an educational plant is an interesting job, in part because of its great diversity, and because of the opportunity of initiative in adapting commercial principles and methods to a non-commercial enterprise, performing a real public service in organizing the business administration and stretching the mileage of the budget dollar.

It is not an easy job. Contrary to common belief, the summer is the busiest season. Education is a year-round job in the modern urban university. Besides this, with a fiscal year dating from July 1st, there is a belated rush to utilize the unexpended portion of budget appropriations before the year expires, and the major task of planning the year's work immediately follows.

Modern educational policy combats the idea of standardized mass production. But the purchasing department at N. Y. U. is an excellent demonstration of the fact that centralization and the observance of sound business principles and procedure is not incompatible with the highest educational ideals.

# Smelting with Coal

THE TOTAL TONNAGE of coal used in smelting of ores in this country is quite small. By-product coke has largely replaced coal in the iron blast furnace, oil and, more recently, natural gas have replaced much coal in copper smelting, and although coal is still the principal reducing agent in zinc smelting, the amount consumed is not large. For all uses of coal in smelting, certain definite qualities are desired. Geographical location, however, often determines whether these qualities can be specified. In some instances, the preferred qualities must be specified, regardless of cost. In others, quality may be sacrificed for lower cost, although the best quality consistent with cost is usually the determining factor.

*Iron Smelting in the Blast Furnace.*—Although anthracite, and to a lesser extent, bituminous coal, at one time were the principal fuels used in smelting iron in the blast furnace, they have been almost completely displaced by coke. No blast furnaces in this country are being operated using coal exclusively.

Bituminous coal, however, is used with coke as the fuel in blast furnaces in Jackson County, Ohio, for making high-silicon or "silvery" pig iron. The coal comes from No. 1 seam of Jackson County, Ohio. It is used to the extent of about 25% of the coke in the charge. It is a hard, lustrous, free-burning, non-caking coal, and is low in ash, under 5%; low in sulphur, under 0.6%; and its ash is of exceptionally high fusion point, over 3000°F. This coal aids in the production of the high temperature needed for the reduction of silica and its low sulphur content helps to keep the sulphur content of the pig iron low.

*Copper Smelting in Reverberatory Furnaces.*—For a long time, reverberatory copper-smelting furnaces were fired with lump coal burned on grates in a fire box. Later, lump coal was displaced by pulverized coal

burned directly in the smelting chamber. Requirements for coal used in the smelting of copper are not rigid, although the use of coal in pulverized form brought about certain standards not necessary in the older hand-stoking practice.

The rank of coal is not ordinarily specified. Location of the plant largely determines the grade of coal used, and coals ranging from sub-bituminous to semi-bituminous are successfully burned in copper reverberatory furnaces. High-rank coals have the advantage of being pulverized more easily than those of lower rank, although it is not necessary to grind sub-bituminous coal as fine for effective combustion as it is coals of higher rank. A difference exists in the grindability of different coals of the same rank and composition. For efficient burning, the combustion zone must be larger for strongly coking or high-rank coals than for weakly coking or non-coking low-rank coals. Hence, other things being equal, size of furnace and amount of charge and therefore the available combustion space may determine the quality of coal to be used when a choice exists.

Any size of coal below about one inch can be fed to the usual pulverizing apparatus, and run of mine, slack, or one of the smaller sizes is usually purchased, depending upon the price.

When pulverized coal is used, deposition of ash in the flues and waste-heat boilers is troublesome if the ash content is high or the ash is of such low fusion point that it does not remain suspended in the gas stream.

The increase in slag volume caused by the deposition of such ash in the charge is somewhat objec-

tionable, although not of great importance because of the large amount of slag already present.

At plants where low-ash coals do not carry a premium, as on the eastern seaboard and in northern Michigan, a maximum ash content of 8% is often specified. However, high-ash coal can be used. A large company in western Canada, because of its location, found it more profitable to use a coal containing from 16 to 17% ash than a more costly coal of lower ash content. A plant in western United States, situated near coal of high ash content but distant from low-ash coal, specifies a maximum limit of 16% ash and charges a penalty for ash in excess of 12%.

Fuel of low sulphur content is not required in the smelting of sulphide ores, because the smelting product, matte, contains sulphur. A high content of sulphur present as coarse particles of iron pyrite often causes difficulties in grinding, as the pyrite accumulates in the grinding mill. Explosions and fires have been thought to be caused by such pyrite. In the smelting of native copper ores and other sulphur-free materials, as where metallic copper is the final product, the sulphur content of the coal must be limited; usually a maximum of 1% sulphur is specified.

*Copper Refining in Reverberatory Furnaces.*—Copper-refining furnaces are similar in design and operation to copper-smelting furnaces and in most cases are smaller. These furnaces are used to produce refined copper from impure (blister) copper, scrap copper, or copper cathodes. In this practice, fuel quality is of more importance than in

*Continued on page 48*



# Reading the Business Barometers

## 9: Electric Power Production

HAROLD A. KNIGHT

WHEN THERE IS one certain commodity which is used in the conduct of virtually all industries and businesses, the measure of the use of that commodity should present a fairly good indicator of the state of business and industrial activity. Such a commodity is electric power. Moreover such figures are available weekly from the offices of the Edison Electric Institute, 420 Lexington Avenue, New York, the only drawback being that these figures of production of electricity, as reported weekly, include the production for households, which are out of the fields of strictly business. Thus it is conceivable that when business is very bad, father will shut up shop, go home and play the radio all day, thus consuming more electricity than if he kept at work, to use a whimsical and exaggerated example.

Electric power production stands high as a business barometer in the eyes of the compilers of the *New York Times* weekly index of business activity. Thus they explain: "Freight car loadings and steel mill activity are assigned the heaviest weights (25 points each) because of their universally recognized

importance and reliability. Electric power production is also heavily weighted (20 points), but its weight is slightly less than that assigned the first two because it is somewhat susceptible to temperature and weather changes, and occasionally to other non-business influences." (Three other components are assigned 10 points each.)

As regards temperature and weather changes, an important rural use is for pumping water in irrigated areas. Thus hot and dry weather would cause an abnormal use of electricity.

The large commercial business and industries use about 50% of the electrical consumption, with small commercial, or retail, taking about 19%. Other commercial users, much less important, are street and interurban railways (a diminishing factor), municipal street lighting

companies, electrified steam railroads, and municipal and miscellaneous uses. Domestic or household consumption is close to 20%. Hence it might be said that the production of electrical power statistics are 80% truly indicative of business ebb and flow. Again, the compilations of the Edison Electric Institute are 90% complete, the other 10% being estimated on the basis of known figures.

The Federal Power Commission issues monthly reports on the production of electrical energy in the United States, while the United States Bureau of Census takes a census of electrical industries every five years, the last one issued having been for 1932.

Electric power production would be a more ideal barometer if readings at consumers' meters were taken weekly instead of monthly. Then the classification of consumption could be known weekly. Now there is just one weekly figure available, the records taken from the generating stations. The Edison Electric Institute receives reports from 400 such enterprises, representing 90% of the industry.

(Continued on page 62)

**Next Month:**  
**Pig Iron**



# THE VOICE with or without A SMILE

*For better or worse, the phone call gets its man, even when the toughest salesman can't crash the gate. Excuse it, please.*

**HOWARD W. ELKINTON**

Philadelphia Quartz Co.

with the same person. A receptionist who may be bright as a daisy at nine in the morning may sound like an undertaker's assistant asking for instructions by 4:45 P. M. Then too, there are some voices that simply fail. "Good afternoon. This is the Petrified Pickle Company" may be the most unconvincing phrase of the day.

To illustrate the point, I recently had a most disconcerting experience with a firm chiefly because the telephone operator had an unconvincing voice. Deliveries by the said company were slowing down, and I wanted pickles. In fact, I had to have them. But every time I called the local office the young lady would answer the call in such a cheery tone that I was entirely unconvinced of her serious interest. She had an easy way of saying "Alrightie" and furthermore she ended her speech with a rising inflection which has its place in the parlor, but left me hanging. Finally, in desperation, I jumped over the local office, a procedure excusable only in the most provoked cases, and called the factory direct, largely because that voice failed to convince me of the company's attention to an order.

The study of telephone voices has developed almost to a hobby stage. You know them. There are the voices that sing; rare but occasional. Some few people encumber their speech with a bit too much of a stutter or some trick of

accent or pronunciation, sufficiently infrequent to permit the listener to accommodate himself to the mannerism, but sometimes even a mild relief from the usual interlude. The inexcusable voice is the nasty kind that literally mistreats trade over the telephone. Some months ago a strange case of this type of telephonic bullying came to my attention. To my very great surprise I found the office group so hesitant about calling this particular firm that they side-stepped whenever possible, and almost hobbled the work of the department. As soon as the cause was known, there was a frank conversation with the local manager, who knew that something was wrong but could not put his finger on the trouble. His index finger was tactfully guided to the sore spot—an unfit personality at the PBX board. The girl was replaced, with a consequent repair of normal trade relations. He had actually been losing business through the nasty voice. It was the most extreme case of my experience. But it can happen.

The operators as a rule are well trained and, as a business group, do a fine job. Not every ear is sharp. Buyers' ears can be dull from over-use, from age, from mental distraction. The report comes through that a representative of the Consolidated Bracket Company is in the reception room. Consolidated Bracket Company? Never

*Continued on page 61*

"GOOD MORNING. This is the Petrified Pickle Company."

And so the call from the outside was handled by the girl at the PBX desk, although as a matter of weather record a heavy fog hung over the ribs of the old city and the person calling was trying to dispel a headache generated the night before.

"Good morning" had been fixed by those studying the vocal frontier as always in good taste. So it is. It cut a rift in the fog and dissolved some of the "head." No one can grow angry over a cheery "Good Morning." Possibly ashamed, but never angry.

Unfortunately, buyers tend to be very short in their telephone responses. This can be explained, but not excused. They usually are at the receiving end of the wire and are not forced to assume an ingratiating or insinuating manner. Consequently they tend to chop and clip and bite short the telephone because psychologically it is always interrupting. Of course times change, and with sellers' markets there may be a marked shift in manner.

Nevertheless all voices are not cheery, reassuring or fog-lifting. In the first place, voices vary with individuals. In fact, they vary

# F. O. B.

## (Filosofy of Buying)

NEW YORK CITY'S purchasing department made headlines in September when Borough President Samuel Levy of Manhattan indignantly rejected a shipment of twenty-four cupids bearing the Swastika emblem and the "Made in Germany" legend, and returned them with his compliments to First Deputy Commissioner of Purchase, Albert Pleydell. The rejection was based on two counts: (1) "This sort of thing is unfair to American labor," though the regulations permit purchase of foreign made goods when a price differential of 25% exists; and (2) "They are sleazy and inadequate, regardless of who made them." Curious Cuthbert, uninformed as to the exact nature of the tests for spittoon-adequacy, wonders whether the decision might not have been reversed if the Borough President had qualified as a two-quid man capable of ringing up a hit on the Swastika with every shot.

● ●

*Supply/demand note:* The City of Jackson, Mich., conducted civil service examinations last month for the position of assistant purchasing agent, left vacant by the recent resignation of Homer K. Curtis. Our market analyst reports the following situation:

*Supply*—40 registered candidates.  
*Demand*—1 assistant P. A.  
*Market*—\$1,500.

● ●

### P. A's Mother Goose

Mister Farmer,  
Down in 'Bama,  
How does your cotton grow?  
Much too nice  
To keep the price  
From hitting a new low.

There was an old buyer  
In Kalamazoo  
Who met so many salesmen  
He didn't know what to do.  
So he started a keno game  
Out in the hall,  
And they played for his orders  
Without seeing him at all.

Eeny, meeny, miny, mo,  
Where's this market going to go?  
Will it sag or will it lift,  
Or will it merely stall and drift?

### FOBias

The chief who crabs at the time and expense of getting competitive bids on a \$500 machine tool for the factory, but expects you to spend half a day locating a 50 cent gadget for his home workshop.

The vendor whose idea of snappy service is to dribble an order to you in a dozen small partial shipments.

The office boy who dawdles half the morning in getting an urgently needed paper, but stands humming at your desk for twenty minutes waiting for you to get a flock of invoices ready for the Auditor.

The foreman who picks out a tool for himself on an emergency local order, and six months later sends you a requisition for replacement, specifying merely "as had."

The filing clerk who always knows exactly where to put a letter, but never where to find it.

The salesman whose idea of geniality is to wring your hand, call you by your first name, and make frequent references to an obscure mutual acquaintance who happened to be your pet antipathy at college.

The office manager who keeps things in a turmoil by installing a new and more efficient routine every month.

● ●

Competition is the life of trade—and of horse racing. But if there were as many dead heats on the track as among bidders, the sport would soon be abandoned.

● ●

October being the appropriate month for spooks, it is not altogether surprising to find the ghost of AAA again raising its head to take a hopeful look around.

● ●

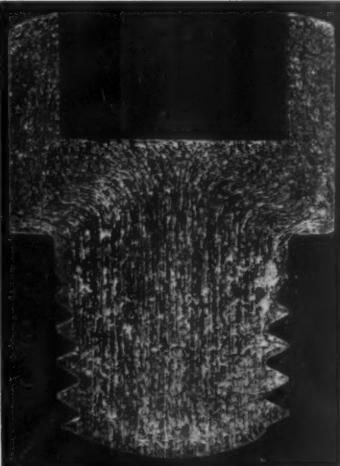
THREE STRIKES ISN'T OUT in the game of municipal purchasing. Up in Bangor, City Manager Wallace appointed Lawrence B. Eddy to the purchasing job left vacant by a resignation on August 1st. At three successive meetings, the Council refused to confirm the appointment on the grounds that Mr. Wallace ought to do the buying himself. But on the fourth try, nearly two months late, Mr. Eddy received their blessing—and the job.

# TWO YEARS RESEARCH BACK

## Superior Cold-Forging Process Replaces Milling From Bar Stock

### 25 YEARS EXPERIENCE IN COLD-FORGING GIVES PARKER-KALON AN ADVANTAGE

It is an accepted fact that forging adds strength to steel—and strength is one of the essential requirements in Socket Screws. That is why Parker-Kalon decided in favor of cold-forging their Socket Head Cap Screws, Socket Set Screws and Socket Head Stripper Bolts instead of milling them from the bar. The cold-forging process provides against head breakage and other structural failures by retaining the fibrous structure of the steel and obtaining a concentration of metal at all points subject to strains.



Cold-forging retains unbroken fibrous structure and increases strength at points subjected to greatest stresses. Note also flat base socket-wrench seats to bottom.

#### Scientific Heat Treatment Assures Unvarying Uniformity

Uniformity of the physical and metallurgical characteristics of Parker-Kalon Socket Screws can be definitely depended upon because every size and type is put through an individual laboratory-controlled routine of heat treatment.

## NEW COLD-FORGED SOCKET SCREWS ACCEPTED ON MAKER'S REPUTATION

#### Industry Welcomes Latest Parker-Kalon Product

"Amazed at Wonderful Reception" . . . Salesman for Large Philadelphia Distributor Reports

Leading mill supply distributors and hardware jobbers all over the country who have already begun to introduce Parker-Kalon Cold-forged Socket Screws report that their customers accept them without

question or hesitation. Engineers and shop men take the quality of these new products for granted, knowing Parker-Kalon's reputation for producing screw products of the highest quality.

One Philadelphia jobber's salesman, after soliciting business for Parker-Kalon Socket Screws, writes: "I was frankly amazed at the wonderful reception which your product received and am greatly impressed with the attitude of the larger screw users, which is: If the product is made by Parker-Kalon, it must be O.K."

#### New Products To Be Sold Through Recognized Distributors

The new Parker-Kalon Cold-forged Socket Screws will be sold through recognized distributors all over the country consistent with the maker's long established policy based on the confirmed belief that—"distributors serve industry economically".



Get Samples - Compare

CLIP THIS COUPON TO YOUR LETTERHEAD  
PARKER-KALON CORPORATION  
200 Varick St., New York  
Please send samples as checked:  
 Socket Set Screws  
 Socket Head Cap Screws  
 Socket Head Stripper Bolts

PARKER-KALON

# K OF NEW SOCKET SCREWS



## LABORATORY PLAYS IMPORTANT PART

The Parker-Kalon Mechanical and Metallurgical Laboratory is a constant safeguard of the quality of Parker-Kalon Modern Fastening Devices.

## \$250,000 SPENT FOR LABORATORY EXPANSION

### Parker-Kalon Equipment for Research, Development and Control of Quality Has No Counterpart in Screw Industry

It was obvious to Parker-Kalon that in order to produce Socket Screws of exceptional merit, it was absolutely necessary to have complete facilities for determining the good qualities as well as any shortcomings of the Socket Screws already on the market because only with that knowledge could they turn out a product that would embody only the good characteristics of the others.

They saw, too, that it was equally important to provide the most modern equipment as well as a highly trained personnel to maintain the standard of quality which is research would establish. These very practical reasons explain why Parker-Kalon invested more than a quarter million dollars to expand the facilities of the Parker-Kalon Mechanical and Metallurgical Laboratory. Every modern scientific aid was provided for the determination and control of all physical and metallurgical characteristics which the uses of Socket Screws demand.

Editors of leading industrial publications who have seen these facilities proclaim them as having no counterpart in the screw industry.

### DETECTS VARIATION OF 1/1,000,000 OF AN INCH



This amazing instrument developed and built in the Parker-Kalon Laboratory checks gauge blocks used to maintain the accuracy of all production gauges. It is sensitive to variations as minute as one millionth of an inch, and gives direct readings.

## Parker-Kalon Announcement Ends Speculation About Its New Product

## RESULTS JUSTIFY LARGE EXPENDITURE OF EFFORT AND MONEY

This month the attention of the metal working industry will be focused on the Socket Screws developed by Parker-Kalon Corporation who, while new in this particular branch of screw manufacture, has for years been recognized as a leader in the fastening device field.

Formal announcement of the new line of products ends the interested speculation concerning them which began when it became known that Parker-Kalon was preparing to enter the Socket Screw field and would offer a product of exceptional merit. Much was expected of this concern because of the ingenuity it has frequently exhibited in producing meritorious fastening devices, among which are the now famous Parker-Kalon Hardened Self-tapping Screws. It was a commonly expressed opinion that if Socket Screws could be improved, Parker-Kalon would be likely to improve them.

### Task Took Over Two Years

An executive of Parker-Kalon, describing the effort put into the new products, makes it clear that the Company took a big job upon itself when it decided to enter the Socket Screw field. He states: "It took well over two years of intensive research and development work to produce Socket Screws good enough to uphold our reputation. We had to do more than produce a 'good' product because good ones were already on the market."

"In reviewing the work it seems that the biggest advantage we had was the ability to begin at the beginning, without preconceived ideas or existing equipment. We could, and did, take full advantage of the many modern developments in metallurgy and in the mechanical arts.

### Spent Fortune In Laboratory

"We spared no expense to accomplish the result we were after. A good example of that is found in the Parker-Kalon Mechanical and Metallurgical Laboratory where we invested a sizable fortune for the additional facilities necessary to develop Socket Screws of the highest quality; and to maintain that standard in production."

### Details and Samples

Parker-Kalon has concisely covered the details of their new Socket Screws in an illustrated bulletin which is offered to users of Socket Head Cap Screws, Socket Set Screws and Socket Head Stripper Bolts. This bulletin together with samples of the new products for inspection and test will be sent upon request.



### QUALITY SAFEGUARDED

From the rod to the finished product Parker-Kalon Cold-forged Socket Screws must pass 28 metallurgical and physical inspections.

metal work focused on developed by tion who, wular branch has for yea a leader in field.

Formal a new line of pested specul which bega known that paring to er field and wo exceptional pected of th the ingenuit exhibited in fastening de the now Hardened S was a comm that if Socke proved, Pai likely to imp

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They saw, i important to modern equi highly traine tain the stan this research

# Cold-forged SOCKET SCREWS

# THE MARKET PLACE



*A quick review of the market  
noting major developments in  
supply, demand and prices of  
selected basic commodities*

## Supply

### COAL

BITUMINOUS COAL PRODUCTION expanded steadily and substantially during September. From a tonnage of slightly less than 8 million tons in the closing week of August, output was over 9 million tons by mid-September (for the first time since March) and up to 9,485,000 tons the following week. Production for the year to date is 8½% ahead of 1936, but for some months past the current rate had been below the corresponding figures of a year ago until the recent expansion again surpassed 1936 rates. It is expected that there will be some curtailment after the announcement of prices by the Commission, since there will then be little incentive for consumers to maintain high stocks. The better grades of stoker coal are somewhat scarce, contrary to the general supply condition.

### COPPER

ELATED AUGUST STATISTICS showed both world and U. S. stocks of refined copper increasing for the fifth successive month, indicating that in spite of well sustained industrial consumption, plus a substantial armament demand, production rates are definitely ahead of requirements. The world stocks of 328,611 tons, and U. S. stocks of 128,480 tons on September 1st, are both substantially under the tonnage of a year ago, and represent only about two months' consumption, but a further extension is not needed or desired. A 20% cut in production activity was made by producers on October 1st.

### COTTON

THE GOVERNMENT'S REVISED September crop estimate was up to 16,098,000 bales, as yield per acre reached a new all-time high of 228.5 pounds. Under the circumstances, CCC holdings from previous years have been withdrawn from the market.

## Demand

SEASONAL DEMAND FOR HEATING purposes has increased, but requirements for industrial power have fallen below expectations. The past summer proved to be the dullest in several years. There has been some buying in anticipation of advancing prices under the new Act, especially since it has been ruled that 30-day deliveries on old contracts will be regarded as violations of the law, thus putting the trade virtually on a spot basis at once. On the other hand there is a general feeling that there will be considerable delay beyond the proposed "deadline" dates in putting these prices into effect.



SEPTEMBER SALES OF COPPER were the lightest in many months. Two days before the end of the month, the total was only 20,990 tons, but two active days carried the month's total up to 28,935, two-thirds of which was for December delivery. Buying reluctance was largely due to price uncertainty, inspired by the weakness of European quotations, and the larger purchases of the closing days were made on the market break.

AUGUST MILL CONSUMPTION of 580,000 bales was the best for this month since 1927. Currently, mill activity on coarse grey cloths is about 11% below the spring peak, but finer constructions are off by 35%.

## Market

PRICES OF BITUMINOUS ADVANCED and strengthened during September, 10 to 35 cents a ton, the higher premiums being asked for immediate shipments in view of a car shortage that may become more acute as the season advances. It is anticipated that the Coal Commission prices will represent another 15 to 20 cent rise, and most of the burden will presumably fall upon the industrial grades where price competition has been most severe, amounting in some cases to a level below production costs. A factor of considerable importance under such a development will be a restoration of the advantage to owners of captive mines, which are specifically exempted from the application of the law. For some time such owners have found it more economical to buy in the open market.

LONDON COPPER PRICES DROPPED below 13 cents in early September, but the domestic market maintained the 14 cent level that had been in effect since late April. Weakness in domestic prices appeared at mid-month, when scrap dropped ½ cent to 11¾ and went down to 10½ cents within ten days. Export prices were the next to fall, then brass and copper items were reduced ½ to 1 cent. The primary market broke to 13 cents on the 26th, and to 12 cents two days later, slightly below the London figure, subsequently recovering to 12½ cents, which appears to be the next level of stabilization.

SPOT COTTON PRICES WENT into new low ground during September, with futures also off under heavy hedging. Textiles sagged further and are apparently steady at the lower levels, where a satisfactory volume of trade is found.



**Boiler down—night call brings quick help from Scully.** One of our officials received a call at his home at 10 o'clock one night. A boiler had broken down. We sent men to the warehouse, measured and cut the needed tubes and had them ready when called for at midnight.

**"We must have it in the morning."** Another emergency call came to us at 9 o'clock one night. Some Stainless Steel was needed for a rush job. We cut and delivered the order early the next morning.



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EMERGENCIES  
TOO  
*-call  
Scully*

WHEN an emergency calls for steel or steel products in a hurry, prompt service will save you many dollars. When such an occasion arises, call Scully. We will meet that emergency.

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Phone, write or wire the Scully warehouse nearest you. And send for our handy, complete Stock List and Reference Book. It's free, of course.

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BALTIMORE • ST. PAUL • CLEVELAND

**UNITED STATES STEEL**

## Supply

### IRON and STEEL

THE ENTIRE STEEL INDUSTRY, from ore shipments to the production of finished steel, slowed down in September from the high rates of the first eight months, and seems to be adjusting itself to a lower rate over the balance of the year. The operating rate dropped steadily from week to week, reaching 74.4 in the closing week of the month, this being slightly below the 1936 rate. It is to be noted, however, that even with this recession the record for the year as a whole is an excellent one. Consumers' stocks are liberal, several major industries being supplied with sufficient metal for fourth quarter requirements at current rates. Sentiment remains cheerful.

### LUMBER

OUTPUT OF LUMBER AT the opening of September was at 73% of the 1929 average. There was a sharp decline in production during the first half month, and a quick recovery to 78% in the second half. Output was substantially above both shipments and new orders.

### NAVAL STORES

STATISTICALLY, ROSIN IS IN a strong position. Southern stocks are low and are declining. At the beginning of the crop year, April 1st, stocks were 209,514 barrels. The September figure was down to 202,922. A year ago they stood at 326,000 barrels, and two years ago just under 500,000 barrels. Receipts this season are 20,000 barrels less than last year, and the season's total is not expected to exceed 1936-1937. In turpentine, however, a serious factor is the substantial quantity in government hands, under CCC loans. A sale of 20,000 barrels from this stock figured largely in the price collapse of September.

### PAPER

PRODUCTION OF BOTH PAPER and paperboard eased off in September, the current rates being 11% and 16%, respectively, below the April peak. Canadian newsprint operations, on the other hand, are still expanding, and capacity is being extended by modernization and speed-up of equipment wherever possible. Wholesalers' stocks of paper are reported as heavy, and newsprint users are also stocking up in anticipation of the higher contract prices for 1938. Foreign pulp supplies are limited.

## Demand

BUYING OF STEEL PRODUCTS in September was up 15 to 20% over August. Export inquiry is good, though principally in small lots. The chief source of demand over the balance of the year will probably be among the lighter items, particularly tin plate and automobile sheets. The outlook for heavy steel is problematical, as railroad buying and construction are lagging behind the anticipated volume. Some buying is being deferred because of declining stock values and the consequent business uncertainty.



SEPTEMBER SHIPMENTS AVERAGED about 66% of the 1929 base—new orders 5 to 15% below shipments—both considerably short of current output.

DEMAND HAS BEEN FAIR TO GOOD. While buying policy has been largely of the hand-to-mouth variety, a strong basic demand is recognized, resulting in a good volume movement. Export trade has also held up well. Shipments of rosin for the first half of the crop year are 34,000 barrels ahead of last year's record.



DEMAND HAS BEEN LESS THAN anticipated for this season of the year, with folding boxboard in particular lagging behind earlier estimates. Fine papers and kraft have shown the best sustained demand. Shipments of newsprint on contract continue in good volume, and the demand for chemical pulp is moderately active.

## Market

LIST PRICES ARE UNCHANGED from earlier announcements. The reaffirmation of ferro-alloy prices for the fourth quarter, despite more costly ores and the curtailment of foreign supplies, is another step toward keeping costs in check, but probable increased cost of coal is a factor that must be faced. Scrap prices are receding. From \$21, heavy melting steel scrap dropped to \$18.50 before the end of the month. There is a determined pressure from automobile makers for lower steel prices to help offset cost increases said to be 20% over 1936.

THE LONG DECLINE IN BOTH hardwood and softwood lumber prices continued during September, despite a temporary recovery about the middle of the month. Southern pine quotations sagged from \$23.66 to \$22.76, and oak flooring from \$90 to \$88.

ROSIN PRICES FLUCTUATED IRREGULARLY during September. There was a net loss for the month, of less than 5%, with prices firming in the closing days and showing considerable independent strength. Turpentine, however, was exceedingly weak. Dipping to a new low for the year at mid-month, the collapse was disastrous in the closing week, with a price of 25½ cents at Savannah and Jacksonville, the lowest in 39 years and 45% below the quotations of last January. The lowest price in 1936 was 40 cents. A 3-cent recovery by October 1st still left this commodity far below previous levels.

THE GENERAL PAPER LIST IS FIRM and unchanged from a month ago. Production costs have been rising and manufacturers believe a rise to be justified, but a marked improvement in demand will be necessary before the schedule is advanced. The board market is weaker, with recessions of \$2.50 per ton noted in chip board, news board and kraft liners. Waste papers are also off, and domestic kraft prices are soft.

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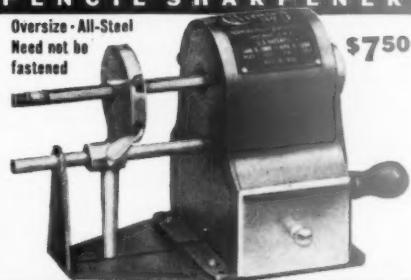
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## Supply

### PETROLEUM

CRUDE OIL PRODUCTION declined steadily throughout September, but at the close of the month the daily average rate was still at the very substantial volume of 3,640,050 barrels. The Bureau of Mines recommendation for October is 3,568,100 barrels, 15% above actual production in October, 1936.

### RUBBER

DOMESTIC STOCKS OF CRUDE rubber were up to 171,052 tons on September 1st, the first new increase in any month of 1937. Tonnage afloat was also high. All major producing countries overshipped their quotas in August. Dealers' stocks in Malaya were up 6,000 tons to 42,735, more than offsetting a slight decline in stocks at ports awaiting shipment. No change in quotas was made at the September meeting of the International Committee. The principal threat to supply is now found in the possibility of shipping difficulties, as Japanese vessels carry a large proportion of this commodity.

### TIN

THE INTERNATIONAL TIN COMMITTEE, at its September meeting in Paris, reaffirmed fourth quarter quotas at 110% of standard tonnages. This action was generally expected in view of the relatively small visible world supply, and with only Malaya producing its full quota of metal. Tin arrivals in the United States amounted to 6,000 tons, with 7,408 tons afloat on October 1st. Stocks in Exchange warehouses were 1,959 tons, down about 8% for the month.

### ZINC

SOT SUPPLIES OF ZINC continued scarce, being down to 11,227 on September 1st, less than a week's supply at current rates of shipment, and comparing with 86,046 tons a year previously. Unfilled orders at the beginning of the month amounted to more than 107,000 tons, an all-time high, and practically a sell-out of domestic production over the balance of the year. By October 1st, this backlog of orders had been cut to 97,037 tons. Despite an import duty of 1 $\frac{1}{4}$  cents per pound, supplies are coming in considerable volume from Norway, Belgium, Canada, Germany, and Poland, and it is estimated that 20,000 tons will come from these sources in the fourth quarter. Ore production was steady at 10,300 tons weekly, with stocks just short of 20,000 tons.

## Demand

THE MOVEMENT OF PETROLEUM products into consuming channels has been fairly well maintained in a routine manner, without any active buying interest. The fuel oil season is slow in getting under way.



U. S. CONSUMPTION IN AUGUST amounted to 43,650 tons, down 5% from July and 11% from August, 1936. For the first eight months of the year, consumption was 397,203, up 5% from 1936, though recent months have been below the figures of a year ago. 1936 set an all-time high consumption record of 573,000 tons, and it is now expected that 1937 will exceed this total by 15 to 20 thousand tons.

DEMAND DURING THE FIRST HALF of the month was brisker than for some time past, but became dull in the second half. Tin plate production continued at 90 to 100% of capacity, with a large food pack in prospect. However, declining activity in steel and delay in bringing out new automobile models have dampened the outlook for large tin consumption.



NEW ORDERS WERE RELATIVELY light, as might be expected with the high level of business already placed. There was pressure for deliveries, however. An encouraging feature of demand is the fact that galvanized sheets are among the heaviest items in the backlog of steel orders, indicating continued requirements of zinc on the part of the galvanizers.

## Market

THE PETROLEUM PRICE LIST showed no major movement during September. Retail gasoline schedules strengthened and the firmness was reflected in primary markets. Kerosene also firmed. Bunker "C" fuel oil for industrial use was weak, and reported as selling below posted prices.

FLUCTUATIONS WERE WIDE in the September rubber market, tending steadily lower from a level around 19 cents at the beginning of the month. In the closing week, spot quotations went to a new low for 1937, at 18 $\frac{1}{16}$  cents, though showing strong resistance to the decline and recovering fractionally on factory buying. When action on 1938 quotas was postponed, a sharper break occurred, and as this was intensified by widespread liquidation of futures, the spot market dropped to 17 $\frac{3}{4}$  cents as of October 1st.

OPENING THE MONTH AT 58 $\frac{1}{2}$  cents, tin prices climbed steadily to 59 $\frac{1}{2}$  cents at mid-month. The tide then turned, the rate of decline being more rapid than the earlier advance and gathering momentum until the closing week saw an abrupt plunge to 55 $\frac{1}{2}$  cents. The prevailing quotation for spot Straits at the end of the month was 55 $\frac{1}{2}$  cents. This market, characteristically sensitive to outside factors, reflects the general weakness in metals and the lack of confidence in sustained high production schedules.

ZINC PRICES WERE FIRMLY HELD at 7.25 cents per pound, East St. Louis, until the very closing days of the month, with increasing tonnages being sold on the average price basis instead of on fixed quotation. For some months the domestic price level has been substantially above the world price, and foreign metal was offered at 6.75, New York, as compared with 7.60 for American metal. Brass special was up \$3 per ton on the 15th, making a differential of \$5 for this grade instead of the usual \$2. The London market broke sharply at mid-month, and foreign metal was reduced to 6.50, New York. On September 30th, the domestic price followed suit with a recession to 6.50, East St. Louis, or 6.85, New York.

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## State Education Department Offers Purchasing Course

The Massachusetts Department of Education has announced that it will again offer the course in Industrial Purchasing, which last year enrolled 57 students from 35 different industries. The course is offered under the auspices of the University Extension Division.

Joseph Sawyer, formerly purchasing agent for the Economy Grocery Stores Corp., and now associated with the R. H. White Co. of Boston, has been reappointed as instructor. Mr. Sawyer is a graduate of the Harvard Business School, has contributed extensively to business journals, and recently completed a study of centralized municipal purchasing for the Belmont (Mass.) Taxpayers' Association.

The course deals with the purchasing of supplies, materials, and equipment required by industry and

trade, except those procured for direct resale. It is intended for both men and women who are interested in the purchasing function and its relation to other parts of a business organization. The actual procedure and principles involved in purchasing are discussed, with illustrations from many different industries.

Guest lectures will be delivered by William G. Morse, Purchasing Agent of Harvard University, and by Henry H. Stafford, Commodity Editor of Babson's Reports, Inc.

The course will meet on Wednesday evenings, starting November 3, 1937, at Room 36, Sever Hall, Harvard University, Cambridge. Enrollment may be made at the first meeting of the course, or previously at the office of the Division of University Extension, Room 217, State House, Boston.



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### Taking the Rut out of Routine

(Continued from page 23)

a matter of chance but a realization of a purpose, the threads of which form a reasonably clear pattern. Review the recent silhouette studies in PURCHASING and see if you do not agree.

As we grow we also build. The salesman who really sells creates his market from a possibility. Just so, the purchasing agent to do an equivalent piece of work must know his requirements and his markets and with these as a basis develop his best possibilities into competent suppliers. The possibilities are there if we search them out and build upon them.

A short time ago I heard a salesman criticizing the calibre of the average assistant purchasing agent who might happen to be the man to interview him in his round of visits. At the time I was impressed with the thought that he was distinctly out of bounds. Some assistant purchasing agents may be immature and lack experience but the same might be said of some salesmen. It might be well to remember that the assistant may eventually become the boss, and a friendly and constructive approach rather than a superior than thou attitude at their first meeting might easily have established a more profitable relationship.

Markets are like rivers—they, too, get out of bounds. The depression years have been as a severe winter, retrenchment like a hard frost struck deep into the

business soil, the highways of commerce became rough and uneven, cracks or fissures made the going difficult. Property deteriorated, machinery became obsolete, inventories showed that the shelves were almost empty. But seasons and business cycles have something in common—they inevitably run their courses. Suddenly business began to show an upward trend, a thaw set in and the winter of the depression poured its snows into the channels of trade. It was more than a freshet—in some instances it was a flood. Skilled help in many trades has become scarce, production is up, prices advance, there are literally waves of buying that make the flood even higher. What do we find? The markets are out of bounds. We have speculation, goods are difficult to obtain, partial embargoes are in effect, the cost of living advances, strikes and labor disturbances become common and we wonder when the flood will recede.

We may be reluctant to admit it, but the NRA did have its good points, and regardless of its measure of achievement one of them was its avowed purpose to keep business within bounds and to spare the country the extremities of a river that is a trickle today and an onrushing torrent tomorrow. The buyer is faced with the old dilemma of anticipating a rising market in his purchases and also remembering that the law of gravity has not been set aside and eventually prices will go down. Call it conservatism struggling with a desire to ride the bandwagon, but regardless of the metaphors we employ to describe it, the task is a difficult one. In plain English, it's frequently a headache.

When persons are out of bounds they cease to think straight. They are like some convention delegates who do things they would not do at home. When labor flies at the throat of capital, reason goes out of the window. They set aside the true meaning of the Psalmist when he said, "Trust in the Lord and do good, so shalt thou dwell in the land and verily thou shalt be fed." They forget that trusting is synonymous with work, and that being fed is the result of work.

Is it not true that we are prone to landmark the years only with those things that appear to us as big, forgetting that bigness itself is unwieldy and less efficient? Henry M. Stanley, in speaking of his explorations in the dark continent, said that more of his followers were killed by insects than by elephants. It is the little things in the aggregate that offer the greatest challenge. The profession of purchasing as it is expressed in the activities of the National Association of Purchasing Agents is an excellent testimonial to the progress that can be made when an organization holds fast to its true objectives and keeps its play within bounds.

GEORGE C. EICHHORN has resigned as city purchasing agent at Greensboro, N. C., to join the purchasing and production staff of the Vick Chemical Company of the same city, under the supervision of Charles G. Yates, Vice President.

# Public Purchasing Progress

A general revision of Tennessee's purchasing methods and the procedure governing contracts, accounting and budgetary control, is being perfected by the State Administration Department. A manual of regulations covering these operations is being prepared for distribution to all concerned. The practice of competitive bidding is being broadened and the use of standard specifications will be general. An inspector will be added to the division.

The State of Connecticut has already made substantial savings under the Purchasing Act of 1937, which became effective on July 1st, according to Edward C. Geissler, Supervisor of State Purchases. A new method of open competitive bidding has been installed, and requirements of the various departments are being consolidated with good effect. As an example, Mr. Geissler cites a \$3,000 order on which seventeen bids were received. He states: "By grouping requisitions of the Personnel Bureau, Labor Department, Public Utilities Commission, and several branches of the Public Welfare Department, the order was made so attractive" . . . that the State received a discount of 30 $\frac{1}{4}$ % on steel desks and files and 38% on chairs, whereas the former method would have brought a discount of only 15%.

Centralized purchasing is a campaign issue in many municipal elections this fall. At Greenwich, Conn., Candidate Leonard S. Clark (Dem.) pledges "a central purchasing agent for the town and a council of department heads the day after election . . . This will be a business man's campaign. The town of Greenwich spends \$3,200,000 a year. It should be spent in a business-like way." And at Rochester, N. Y., the Republican platform states: "We favor the consolidation or coordination of the purchasing agencies of the County, City, and Board of Education, to secure greater efficiency and economy in the expenditure of public funds."

The township of Teaneck, N. J., this month institutes a new system

of centralized purchasing, with Township Clerk Howard B. Ward serving as purchasing agent. The plan was adopted after a careful study of the buying systems and practices of municipalities of various sizes and of a variety of public institutions. In a pamphlet calling for the establishment of the system, the advantages are listed as follows: "It gives the purchasing agent reliable data on which to premise buying of material which is in regular or constant use; when prices are

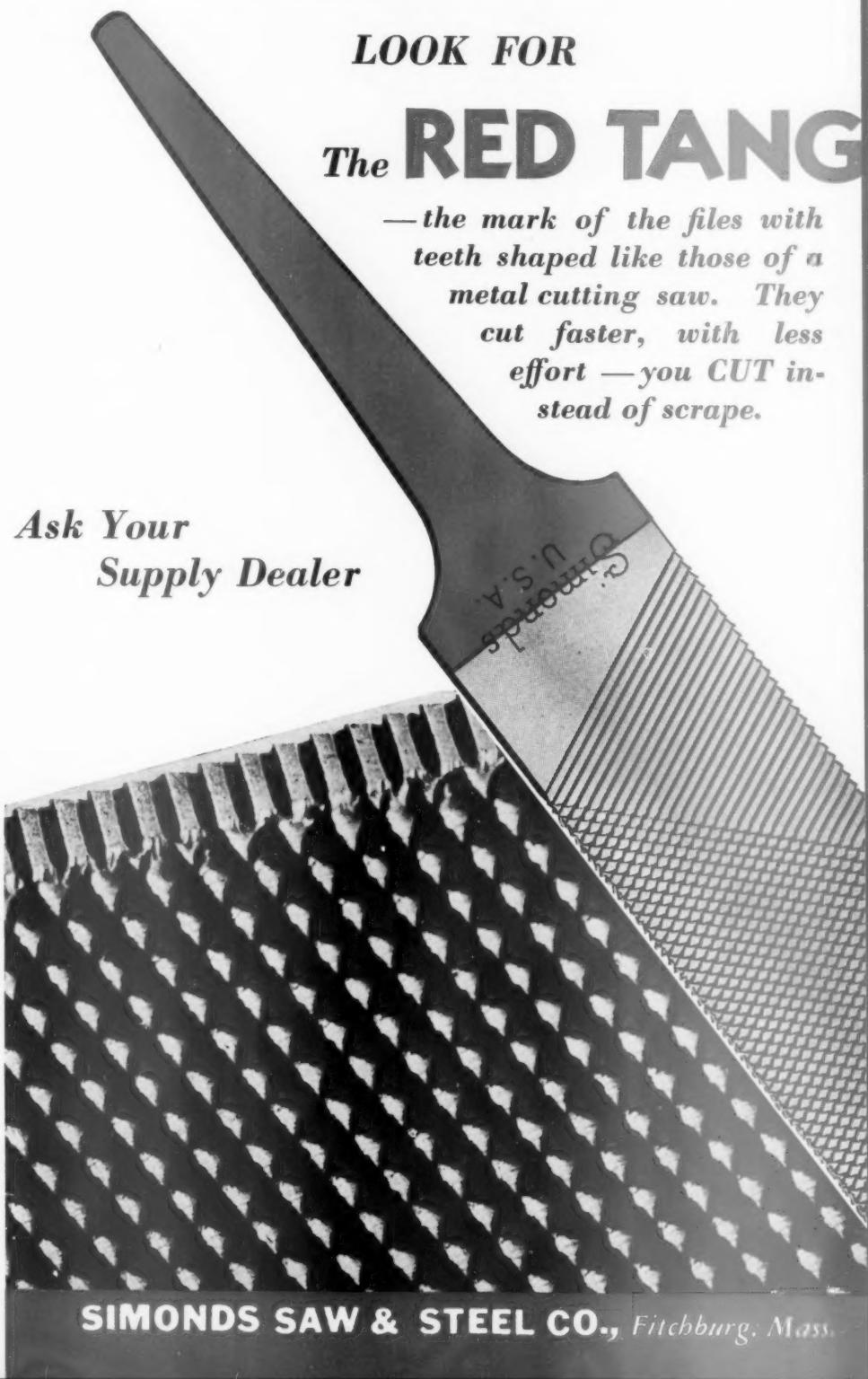
high he may judge how long he can operate on a 'hand-to-mouth' basis before the supply will be exhausted; when prices are low, he will know how large his orders should be to meet requirements for a certain period . . . It is not presumed that immediately noticeable benefits will be established, but we are certain that if a centralized purchasing department is efficiently conducted with the cooperation of all the departments, our experience should justify its adoption."

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# PERSONALITIES in the NEWS

E. L. FRIES has been appointed general purchasing agent of the Union Pacific Railroad, with headquarters at Omaha, Neb. He succeeds U. K. HALL, who has been named general storekeeper of the railroad. Mr. Fries has been serving as special representative of the Executive Vice President.

C. A. KEEBLE has been appointed purchasing agent of the Union Pacific Railroad, with headquarters at Los Angeles. Mr. Keeble is a graduate of Occidental College, and has been engaged in railroad work during his entire business life. He came to the Union Pacific in 1918, serving in the stores department and chief engineer's office before joining the purchasing organization sixteen years ago. He succeeds ROBERT H. ADAMS, who retires after 37 years of service. Mr. Adams in 1901 became purchasing agent of the Empire Construction Co., which built a portion of the U. P. system lines, and joined the purchasing department of the railroad two years later. He was appointed purchasing agent in 1930.

D. N. RUPERT has been appointed purchasing agent of the Pittsburgh Gage & Supply Co. He has for some time been connected with the sales department of the company. He succeeds L. L. BRENHOLTS, who has been elected president of the Harris Pump & Supply Co., of the same city.

DR. RUSSELL FORBES, Commissioner of Purchase for the City of New York, was one of the principal speakers at the annual convention of the National Governmental Research Association, held last month at Ithaca, N. Y.

FOREST MOELLER has been appointed to the newly created office of City Purchasing Agent at Lincoln, Neb. BEN BOEKE has been named auditor in the new department.

WARNER DEFOE has been transferred to the Bridgeport (Conn.) office of the Kron Co., and will serve as purchasing agent of the company.

FRED G. SPACE, Purchasing Agent of the Seymour Mfg. Co., addressed a meeting of the Connecticut Paper Box Manufacturers' Association at the Hotel Taft, New Haven, September 20th, on the topic, "Selecting a Source of Supply."

CHARLES HENRY of Wichita, Kansas, has been appointed purchasing agent for Sedgwick County, effective September 1. Mr. Henry has for some time been serving as deputy county clerk.

W. G. OAKS of Newland, N. C., has been appointed purchasing agent for Avery County.

JOHN W. DAVIS, State Purchasing Agent for Vermont, addressed the Rotary Club of Burlington on September 20th, describing the operation of his department.

JOHN T. GOLDEN, for the past twenty-two years associated with the municipal purchasing department at Lawrence, Mass., as inspector and weigher of coal, and assistant purchasing agent, has retired from active service, on a municipal pension. VINCENT A. DOYLE has been named acting assistant purchasing agent, succeeding Mr. Golden.

D. D. MACBETH has been named purchasing agent for the Ferro Enamel Corp., Cleveland, Ohio, heading the new centralized purchasing department which was established on October 1.

DAN TRANER, Superintendent of the Lynn (Mass.) Hospital, addressed the annual convention of the American Hospital Association at Atlantic City last month on the topic, "Advantages to Hospitals of Cooperative Buying."

EDWIN R. MILES, Utah State Purchasing Agent and Vice President of District No. 1, N.A.P.A., was the subject of a recent personality sketch in the Salt Lake City *News* series, "Who's Who in Salt Lake City."

MERRITT A. CLINE has been appointed purchasing agent for the Alexander Smith & Sons Carpet Co., Yonkers, N. Y., succeeding the late HERBERT G. GOLDING. Mr. Cline has been associated with the company for fifteen years, and has served as assistant purchasing agent since 1930.

COL. WAYNE R. ALLEN, Purchasing Agent for Los Angeles County and formerly Vice President of N.A.P.A. for District No. 1, has taken command of the 160th Infantry, California National Guard. COL. ALLEN is a graduate of the Infantry School of the U. S. Army and of the Command and General Staff College at Fort Leavenworth, Kansas. He is a veteran of the Mexican Campaign of 1916, served as a company commander of combat troops in France, and has for several years commanded the 159th Infantry, of San Francisco.

ROSCOE C. HOPKINS, Secretary of the Kansas City Purchasing Agents Association, was recently re-elected for his ninth consecutive term as secretary-treasurer of the Secretaries Forum of Greater Kansas City.

WILBUR C. BRELSDORF has been appointed Director of Purchases for the Stanley Mfg. Co., Dayton, Ohio, succeeding CHARLES J. AUGUST, who has been transferred to other duties in the organization.

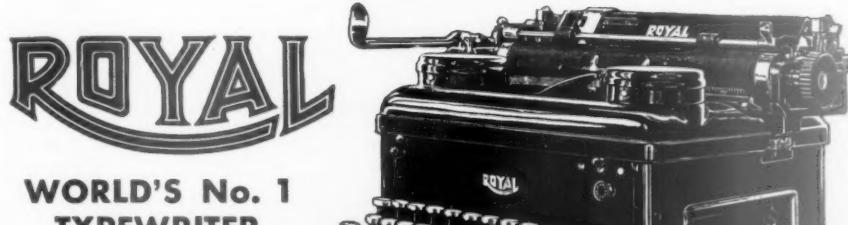
CHARLES HANCOCK, Purchasing Agent for the Streets and Engineering Department of the City of Springfield, Mass., recently completed forty-two years of service with that department. Starting as a rodman in the Street Department, he won steady promotion, and was advanced to the purchasing office in 1915.

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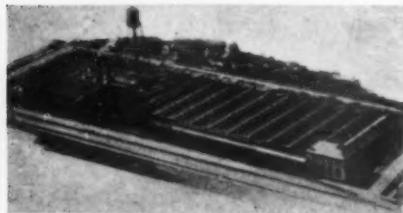
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Boston Pittsburgh New York Detroit Philadelphia Chicago

### **Smelting with Coal**

(Continued from page 32)

smelting practice. Ash and sulphur contents are of great importance and must be kept to a minimum. Although cheap coals of inferior quality can be utilized in reverberatory smelting, quality is more important than price in refining operations.

Sulphur in coal must be kept as low as is consistent with economy. Usually a maximum of 1% sulphur is specified. Ash content is especially important in coal used for firing refining furnaces, because it increases the amount of slag which must be retreated to recover its copper content. Moreover, the ash, by settling on the metal bath, reduces the rate of heat absorption by the metal and thus decreases the thermal efficiency. Usual specifications stipulate a maximum of 8% ash in coal used in refining furnaces. Average annual ash contents of 6 or 7% are common.

Many operators believe that ash of low fusion point deposits in the slag and in the flues and waste-heat boilers, whereas ash of high-fusion point largely passes to the stack as fly ash.

*Lead Smelting in Blast Furnaces.*—Coke is the usual fuel in lead blast furnaces, although pulverized coal burned at the tuyeres has been used in lead blast-furnace practice to replace as much as one-third of the coke charged. Successful experimental runs have been reported, but the process has not been successful commercially. The small combustion zone available in present furnaces prevents efficient combustion of pulverized coal in this manner. A fast-burning coal is preferred.

*Zinc Smelting in the Old Retort Process.*—Coal and anthracite as well as coke are used as reducing agents for oxidized zinc ores in externally heated retorts. Cost of fuel at the smelter, nature of the ore, and other considerations determine the kind of fuel to be used, and no definite specifications are ordinarily given. Anthracite screenings are commonly used, though bituminous coal is sometimes mixed with an-

thracite. The amount of ash contained in the fuel is not important, except as it affects the furnace capacity and efficiency. Although fuel of low ash content is preferred, anthracite culm containing 15 to 25% ash is necessarily used for economy in common practice.

Coal with ash of high fusion point is required when used with ore of low softening temperature; otherwise, coal with ash of low fusion point is satisfactory. The fusion point of the ash of an anthracite used in large quantities for retort zinc smelting is between 2550° and 2730°F.

Too much volatile matter in coal adversely affects condensation of the zinc, yet a small content of volatile matter is considered necessary by most operators. An anthracite commonly used contains between 4 and 5% volatile matter, a minimum of 1% and a maximum of about 5% being preferred.

Reduction fuel of the lowest possible sulphur content is preferred. Most of the fuel used contains approximately 1% sulphur. The size of the reduction fuel varies with the nature of the charge treated. When the ore is relatively coarse the fuel should be quite fine.

Coal is mixed with clay and furnace residues to form a luting mixture employed in sealing off the

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**Flexible BELT LACING**

STEELGRIP is a stronger lacing for all power and conveying belts. Clinches smoothly into belt, compresses ends, prevents fraying. 2-piece hinged rocker pins prevent excessive wear. In boxes or long lengths.

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THE BROWN-BRIDGE MILLS, INC.  
TROY, OHIO



condensers. Such coal must have sufficient caking qualities to form an adhesion and tight bond between the condenser and the retort.

*Zinc Smelting in the Vertical Retort Process.*—This is a technical and economic improvement over the old retort process. Instead of heating a loose mass of zinc oxide and coal as a batch in a small horizontal retort, the charge is briquetted and fed continuously through a vertical retort having high heat-transfer ability and thus high smelting capacity.

A mixture of anthracite and coking coals is used with the zinc oxide in making the briquets. The anthracite culm which is used is ordinarily of high ash content as is the case in the old retort process. The bituminous coal must be carefully chosen as to its caking properties since the process relies on the coking of the briquets to hold them together during smelting in the retort, the spent briquets discharging in substantially their original shape and size. Thus a strongly caking

coal is used in sufficient amount to impart the necessary strength to the coked briquets.

Ash content and fusibility in either the anthracite or bituminous coal is not of great importance except as it is an inert material and reduces the capacity of the retort. The content of volatile matter of the bituminous coal is not important so far as the reduction of the zinc is concerned as it is driven off in a preliminary coking retort ahead of the smelting retort and the combustible gases resulting from this coking treatment are utilized in waste-heat boilers.

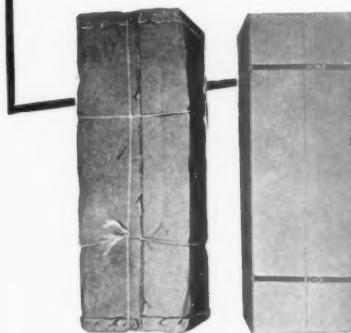
*Direct-Process Zinc Oxide.*—This process for the production of zinc oxide involves the smelting of zinc oxide from roasted ores and the immediate reoxidation of the vaporized metallic zinc to a very finely divided and high grade zinc oxide. An older method of smelting involving an intermittently charged furnace and a newer method using a continuous chain-grate type of furnace are in use.

In the intermittently charged furnace anthracite culm or other small-sized smokeless coal, e.g., semi-anthracite, is used as the fuel and reducing agent.

In the continuous furnace low-grade anthracite fines are briquetted with sulphite pitch and used as the fuel and reducing agent.

*Aluminum Smelting.*—In the electrolytic smelting process for aluminum, carbon electrodes are employed for the double purpose of conducting electricity into the bath and supplying carbon to combine with the oxygen liberated in the electrolysis. These electrodes must be of extreme purity because all the impurities present enter the bath and either affect the electrolyte or contaminate the aluminum. Because of their low ash and high fixed-carbon contents, petroleum coke and some pitch cokes are the most satisfactory forms of carbon for making electrodes. Anthracite, if low enough in ash, may be used. Welsh anthracite containing from 1 to 4% ash has been used. The smaller sizes are satisfactory as lumps must be crushed prior to use.

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#### NO EXTRA COST

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# Among the Associations

**Baltimore**—The second annual Manufacturers' Products Exhibit, sponsored by the **Baltimore Association**, will be held at the Lord Baltimore Hotel on October 19th, 20th, and 21st. The exhibit will include 100 booths devoted to a presentation of the products and services offered by industrial manufacturers and distributors of the city. A special booth will demonstrate the various benefits to be received from association membership, both local and national.

Merle Thorpe, Editor of *Nation's Business*, will be the principal speaker at a special Exhibitors' Breakfast Meeting on Wednesday morning.

The committee on arrangements consists of Frank H. Carter (*Chairman*) of Dietrich Brothers, Inc., Morton S. Busick of Lord Baltimore Hotel, C. B. Mann of Black & Decker Mfg. Co., Leonard Olt of Crown Cork & Seal Co., City Purchasing Agent J. Herbert Gaston, C. C. Copenhaver of Eastern Rolling Mill Co., William R. North of Revere Copper & Brass, Inc., and W. W. Gast of E. I. du Pont de Nemours & Co.

## SEPTEMBER 2

**San Francisco**—Luncheon meeting of the **Northern California Association**, at the Palace Hotel. Speaker: C. Y. Kwong, Chancellor of the Chinese Consulate, "What China is Fighting For".

## SEPTEMBER 8

**Buffalo**—Meeting of the **Buffalo Association**, at the Statler Hotel. Speaker: Walter Edmunds.

## SEPTEMBER 9

**Los Angeles**—Dinner meeting of the **Los Angeles Association**, at the Jonathan Club. Speaker: L. A. Odlin, Supply Corps Commander, U. S. Navy, "Navy Procurement".

**Seattle**—Opening fall meeting of the **Washington Association**, at the Washington Athletic Club. Speakers: Louis F. Bunge of Olympia, Chairman of the Board of Pardons and Paroles, Herbert H. Clarke of Tacoma, Ralph Etchey and C. R. Ragsdale of Seattle. Industrial film, "Walls Without Welds", showing the manufacture of seamless steel pipe, with explanatory talk by Ralph Winship.

**Philadelphia**—Golf outing and dinner meeting of the **Philadelphia Association**, at the Llanerch Country Club.

## SEPTEMBER 13

**Portland**—Monthly dinner meeting of the **Oregon Association**. Speaker: Lyle Janz of the Better Business Bureau, "Rackets".

**Reading**—First regular fall meeting of the **Reading Association**. Discussion of trends in labor and commodity prices.

**Columbus**—Dinner meeting of the **Columbus Association**, at the Columbus Athletic Club. Speaker: James A. Maddox, Promotion Manager for the Columbus Chamber of Commerce, "The Value of Organization".

**New Orleans**—Dinner meeting of the **New Orleans Association**, at the Jung Hotel. Three educational films were shown through courtesy of the Chevrolet Motor Car Co., as follows: "Conquering Roads", "Around the Corner", and "Spot News".

## SEPTEMBER 14

**Milwaukee**—Meeting of the **Milwaukee Association**, at the Elks Club. Speaker: Prof. Nathan B. Feinsinger, Counsel for the Wisconsin Labor Relations Board, "Analysis of the Wisconsin Labor Relations Act".

**Tulsa**—Fourth annual dinner party of the **Tulsa Association**, in the Roof Garden of the Tulsa Club, as guests of Baker Oil Tools, Inc.

**Pittsburgh**—Dinner meeting of the **Pittsburgh Association**, at the William Penn Hotel. Speaker: T. D. Jolly of the Aluminum Company of America, "Buying Proper Quality". Mr. Jolly's paper will constitute a section of the new N.A.P.A. Handbook of Purchasing Policies and Procedure. Howard Livezey of Railway & Industrial Engineering Co., and R. M. Hoffman of Pittsburgh Plate Glass Co., led a discussion period following the address.

**New York**—Meeting of the **Metropolitan Purchasers' Assistants Club**, at the Hotel Brittany. Speaker: J. H. Leonard, Secretary of the New York Purchasing Agents Association, "Association Values".

**Detroit**—Golf tournament of the **Detroit Association**, at Grosse Ile Golf and Country Club.

## SEPTEMBER 15

**Oakland**—Joint banquet meeting of the **Northern California Association** and the Oakland Chamber of Commerce, at the Hotel Oakland, in connection with the Seventh Annual Manufacturers' Exposition of East Bay Products.

**Canton**—Golf tournament, dinner meeting and entertainment of the **Canton & Eastern Ohio Association**, at the Shady Hollow Country Club. The affair was the largest in the history of the Association, with 125 players in the tournament, and 200 attending the dinner meeting.

**Erie**—Meeting of the **Erie Association**, at the Barn. Officers for the new year, as previously announced, were installed at this meeting, and took charge. A. J. Becker of Bucyrus-Erie Co., president elect, announced committee appointments for the year.

### SEPTEMBER 16

**Chicago**—Dinner meeting of the **Chicago Association**, at the Lake Shore Athletic Club. Speaker: Howard Vincent O'Brien, "All Things Considered". District Vice President J. W. Nicholson of Milwaukee was present and spoke briefly on national affairs.

**Dayton**—First regular fall meeting of the **Dayton Association**, at the Engineers Club. Announcement of committees and program for the year.

**Cleveland**—Dinner meeting of the **Cleveland Association**, at the Hotel Cleveland. Speaker: James E. Gheen, "Minding Your Own Business".

**Toledo**—Meeting of the **Toledo Association**, at the Toledo Yacht Club. Speakers: Clyde Llewellyn of Bliss & Laughlin Steel Co., "Cold Finished Steel and its Applications"; Alfred Mackinder of the City Manager League, "The City Charter".

**Salt Lake City**—Meeting of the **Utah Association**, at the Chamber of Commerce. Speaker: Prof. Mark H. Greene of the University of Utah Business School, and former head of the Utah Recovery Board, "The Trend Toward Economic Dictatorship".

**Springfield, Mass.**—Golf outing and dinner dance of the **Western Massachusetts Association**, at the Springfield Country Club. Ralph Charpentier and Edward Fleming were in charge of arrangements.

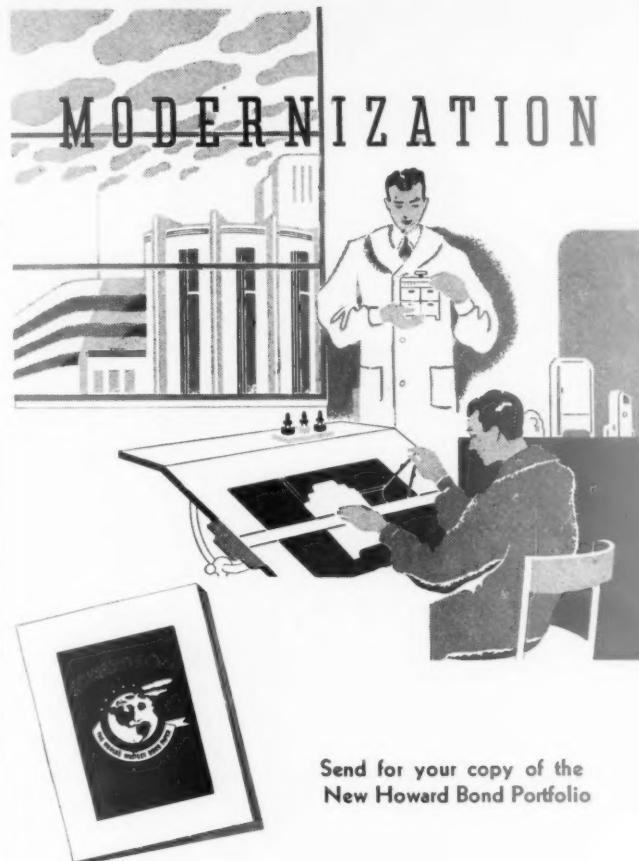
### SEPTEMBER 17

**Toledo**—The **Toledo Association** was among the civic organizations officially participating in the Centennial Dinner at the Naval Armory, commemorating the first century of the city's history. Speakers: Edward F. McGrady, former Assistant U. S. Secretary of Labor, and author of the Toledo plan for industrial peace, and Gen. Hugh S. Johnson, former NRA Administrator.

### SEPTEMBER 21

**Akron**—Meeting of the **Akron Association**, at the University Club. Motion picture, showing the manufacture, fabrication and use of Enduro stainless steel, shown through courtesy of the Republic Steel Corp.

**Bristol, Conn.**—Annual sheep bake and social of the **Hartford County Purchasing Agents Club**, at Lake Compounce. The entertainment program was held jointly with the Get-Together Club of the Wallace Barnes Company, which held its annual banquet meeting at the same time. In charge of arrange-



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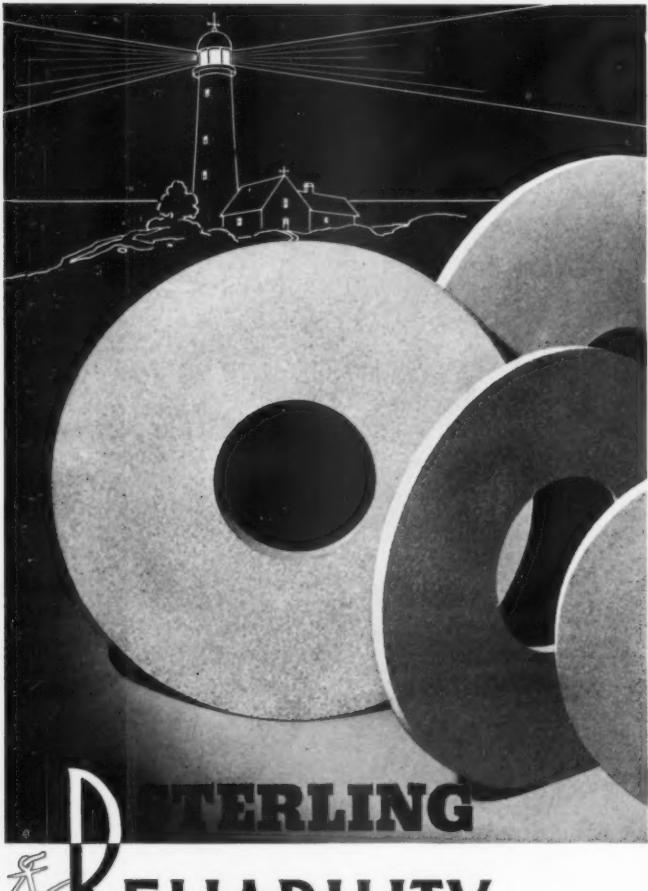
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ments were John Whitman and A. J. Levins of the Wallace Barnes Co., and C. V. Chapin of the Bristol Brass Corp.

**St. Louis**—Meeting of the St. Louis Association, at the York Hotel. Speaker: George A. Renard, Executive Secretary of N.A.P.A., "Your Job of Buying as Others See It".

**New York**—Dinner meeting of the New York Association, at the Builders Exchange Club. Speaker: Dr. Glenn Frank, former president of the University of Wisconsin, and now president and editor of *Rural Progress*, "National Economic Life".

### SEPTEMBER 22

**Milwaukee**—Meeting of the Education Committee of the Milwaukee Association, at the Elks Club, to complete arrangements for the course in purchasing sponsored jointly with Marquette University.

### SEPTEMBER 23

**Detroit**—First regular fall meeting of the Detroit Association, at Webster Hall. Speaker: DeLoss Walker, associate editor of *Liberty* magazine. Officers for 1937-1938 were installed: President, A. W. Taylor; Vice Presidents, William G. Boley and Henry George; Treasurer, Earl Coleman.

**Cincinnati**—Golf outing and dinner meeting of the Cincinnati Association, at the Clovernook Country Club.

**San Francisco**—Luncheon meeting of the Northern California Association, at the Palace Hotel. The topic, "Vacation Days in Color", was illustrated with motion pictures by Frank Kugelberg, Harry Kolb, and others.

**Dallas**—Golf tournament, dinner meeting and entertainment of the Dallas Association, at Glen Lakes Country Club. William Wood was chairman of the committee on arrangements. Delegates were present from the associations at Houston and Fort Worth.

**Seattle**—Inspection trip by the Washington Association to the West Michigan Street plant of the Boeing Airplane Co. Manufacturing and assembly departments were shown at work on the new flying boats under construction for Pan American Airways.

### SEPTEMBER 24-25

**Toronto**—Thirteenth Convention and Industrial Products Exhibit of Canadian Purchasing Agents Associations, at the Royal York Hotel. Speakers: George P. Brockway, George A. Renard, Julian Davies, R. L. Wright, H. N. McGill, Harvey Spang, F. J. Arthurs, A. R. Haskell. An outline of the program appeared in this column last month. Delegates were present from all associations in District 5.

#### SEPTEMBER 25

Columbus—Meeting of the 6th District Council, N.A.P.A., at the Neil House. Vice President J. E. O'Brien of Cleveland presided at the meeting, and E. M. Birkenbach, National Director of the Columbus Association, was in charge of arrangements.

#### SEPTEMBER 26

San Francisco—Family picnic outing of the Northern California Association, at San Mateo County Memorial Park.

#### SEPTEMBER 27

Allentown, Penna.—Golf outing and dinner meeting of the Lehigh Valley Association, at the Lehigh Valley Country Club. A representative of the Horace T. Potts Co., Philadelphia, discussed "Stainless Steel."

#### SEPTEMBER 28

Tulsa—First fall meeting of the Tulsa Association. Discussion of the Consumers (Sales) Tax and the Use Tax, recent Oklahoma legislation enlarging the scope of the Sales Tax which has been in effect for several years, and which affect practically every purchase transaction.

Saybrook, Conn.—Meeting of the Connecticut Association, at Ye Old Castle Inn, Cornfield Point. Frank Martineau of Rhode Island gave a report of his experience at the purchasing course of the Harvard University Summer School.

#### SEPTEMBER 29

Boston—Testimonial dinner under the auspices of the New England Association, at the University Club, honoring George P. Brockway, a past president of the association and now president of the National Association. The committee in charge was: Charles L. Sheldon of Hood Rubber Co., P. E. Bott of Kinney Mfg. Co., E. E. Brainard of Merrimac Chemical Co., D. G. Donovan of Pepperell Mfg. Co., R. C. Kelley of Converse Rubber Co., and S. R. Keyes of Boston Edison Co.

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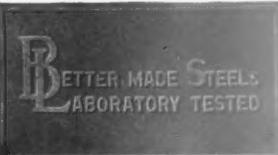
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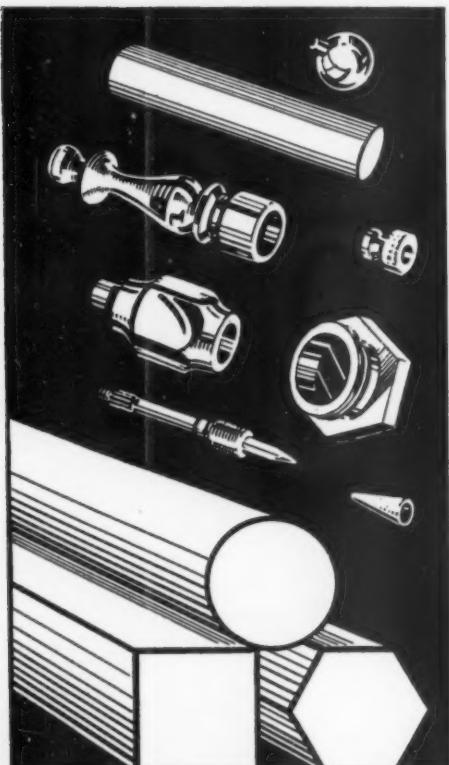
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## Boffey Memorial Award



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THE NATIONAL ASSOCIATION OF PURCHASING AGENTS has announced an essay contest, open to students in college and university business administration courses during the academic year 1937-1938, known as the Boffey Memorial Award. The object of the contest is to "commemorate the writings, editorial leadership and contributions of L. F. Boffey to business education, purchasing standards and procedure, and to the purchasing profession."

Mr. Boffey is generally recognized as having been the outstanding leader in the development of industrial purchasing from a routine office function to its present position of influence and authority. For five years he served as secretary of the National Association of Purchasing Agents, during its formative stage. He was co-author, with Edward T. Gushée, of "Scientific Purchasing," the first complete and authoritative treatise on the purchasing function in industry. He was the first recipient of the Shipman Gold Medal, awarded annually by the N. A. P. A. for outstanding service to the purchasing profession. In 1916 he withdrew from actual purchasing work to establish *The Purchasing Agent*, first national publication dedicated to purchasing men and their problems, and edited that publication for seventeen years. At the time of his death in January, 1937, he was publisher of PURCHASING, successor to the earlier journal. His clear and forceful forward thinking, and his exceptional gift of expression, are perpetuated in the official code of principles and standards of purchasing procedure, and are the basis of a large proportion of the written and unwritten standards which guide all purchasing men in the conduct of this important function.

The character of the award is particularly appropriate, for Mr. Boffey's fundamental theme was that purchasing must be added as a fourth essential to the traditional

functions of business administration—production, sales and finance. To this end he had urged the development of education in purchasing, and was active and successful in helping to introduce a consideration of this subject in the curricula of vocational schools and advanced courses in business.

The award for 1938 offers four prizes of \$200, \$150, \$100, and \$50, made from the Boffey Memorial Students' Educational Contest Fund sustained by voluntary contributions from various Purchasing Agents Associations throughout the country. The project is authorized by the Executive Committee of the N. A. P. A., and will be conducted annually. A special committee in charge of the contest includes the following: Chairman, Dr. F. W. Russe of Mallinckrodt Chemical Works, St. Louis; F. Albert Hayes of American Hide & Leather Co., Inc., Boston; N. H. Taylor of Dominion Bridge Co., Ltd., Toronto; John A. Rowe of Humble Oil & Refining Co., Houston; and George W. Aljian of California & Hawaiian Sugar Refining Corp., San Francisco.

The rules governing the competition are announced as follows:

#### Subject

1. All manuscripts must deal with the subject of Purchasing or a specific phase of purchasing for corporate consumers, or some procedure or policy of management that is identified with or related directly to purchasing.

There is no limitation on the length or method of presentation; that should be determined by the amount and the form of material and information necessary adequately to present the subject.

#### Form of Manuscripts

2. All manuscripts must be submitted in typewriting, written on one side of the sheet, double spaced, on white paper, approximately  $8\frac{1}{2} \times 11$  inches.

3. Manuscripts may be illus-

trated with forms and may incorporate charts and other material. Quotations from books or other sources must be credited to the sources from which they are taken.

4. Each competitor must inscribe his manuscript with an assumed name and in an accompanying plain, sealed envelope, addressed to the Secretary of the National Association of Purchasing Agents, 11 Park Place, New York, N. Y., give his real name and address and his school. The accompanying envelope should also be identified as belonging to the manuscript by the inscription of the assumed name on the outside of the sealed envelope.

#### *Those Eligible to Compete*

5. The competition is open to regularly enrolled, full-time students in any recognized college or university having a School of Commerce or College of Business Administration.

It is the intention to make this a students' contest. Members of this Association and those who are eligible for membership cannot qualify.

#### *Ownership of Manuscripts*

6. All manuscripts submitted in this competition shall become the property of the National Association of Purchasing Agents for publication or such other use as the Association may decide to make of them.

#### *Time of Competition*

7. Manuscripts must be placed in the office of the National Association of Purchasing Agents, either by messenger or by registered first-class mail, not later than noon on June 1, 1938.

#### *Award*

8. The Boffey Memorial Students' Educational Contest Committee will appoint competent judges who shall make the award, and their decision shall be final.

### **Standards Bureau Issues Booklet**

"Services of the National Bureau of Standards to the Consumer" is the title of a new publication issued by the Bureau, outlining its work and accomplishments in establish-

ing quality standards on a variety of products in common use. The list includes automobiles and automotive equipment, carbon paper and typewriter ribbons, ceramic whiteware, dental research, dry cells and batteries, dry ice, electric lamps, garden hose, gas burners, heating appliances, inks, insulation, leather, motor fuels, paint and varnish, paper, paper towels, refrigerators, rubber products, shoes, soaps, tableware, textiles of many types, thermometers, timepieces, vitreous enamel, window glass, etc. The booklet, of 28 pages, is pro-

fusely illustrated with photographs of laboratory equipment and actual tests being made on typical materials to determine their performance and durability under conditions approximating normal use. This is supplemented with an explanation of the need and development of specifications, the Bureau's certification and labeling plan, and commercial standards. The treatise has been compiled by Robert A. Martino, and copies may be obtained by addressing the Bureau or the Superintendent of Documents at Washington, D. C.

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# Purchasing Course at Milwaukee

THE MARQUETTE UNIVERSITY COURSE in Purchasing opened last month. As in previous years, the class is under the direction of Prof. George W. Knick, economist, assisted by members of the Educational Committee of the Milwaukee Purchasing Agents Association, which sponsors and promotes the course. A series of lectures has been prepared, based on various key chapters of the text books—Prof. Lewis' *Industrial Purchasing* and Dr. Forbes' *Governmental Purchasing*—and presented by members of the association who are specially qualified by experience and specialized knowledge in the various fields. The general outline of the course is as follows:

Sept. 29—Purchasing procedure; the tools of purchasing; records, forms and files; the requisition; inquiry and negotiation. R. L. Roeder of Perfex Corp.

Oct. 6—General purchasing functions. Al. Curtis of National Enameling & Stamping Co.

Oct. 13—Control of quantity; economical unit of purchase; inventory control; obsolescence and salvage. Gilbert Hartman of Oilgear Co.

Oct. 20—Purchasing for the State's industries. H. B. Hayden, Supervisor of Sales and Production, Wisconsin State Prison, Waupun, Wis.

Oct. 27—General problems of purchasing—selected topics covering many phases of purchasing, especially those related to iron and steel purchases. Charles E. Stone of Interstate Drop Forge Co.

Nov. 3—Specialization in purchasing; raw materials; operating supplies; machinery and equipment. Walter H. Wenzel of Vilter Mfg. Co.

Nov. 10—Maintenance and repair

materials; office equipment and machines; office supplies; printing; service. Gustav Schlaefli of the Milwaukee Journal.

Nov. 17—Sources of supply; selection of sources; manufacture vs. distributor; relations with sales representatives; reciprocity; protection of sources. F. S. Wilhoit of Cutler-Hammer Co.

Nov. 24—Problems of quality—responsibility; purchase by trade mark, sample, description or performance; development of specifications. Governmental purchasing. Joseph W. Nicholson, City Purchasing Agent.

Dec. 1—Quotations, purchase orders, follow-up; receipt and inspection; checking invoices. Prof. George W. Knick.

Dec. 8—Traffic—tariffs and rates; routing; tracing and expediting; claims, overcharge, loss and damage; cost of l. c. l. purchases. Oscar Bonesho of Hummel & Downing Co.

Dec. 15—Legal aspects of purchasing; the purchasing relationship, responsibility and liability; contracts; sellers' liability; acceptance, rejection, and remedies; commercial arbitration; suggested legal rules for the buyer. Walter J. Mattison, City Attorney.

Dec. 22—Open.

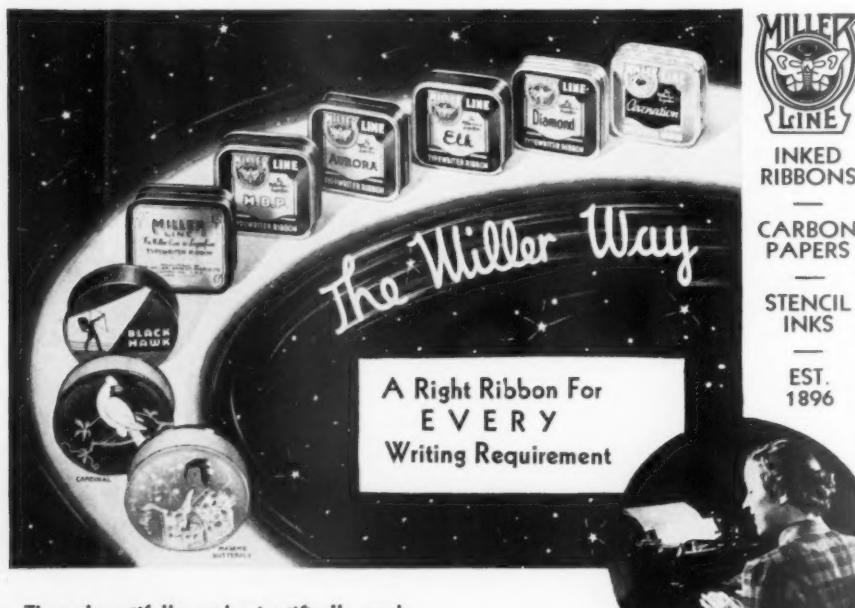
Jan. 5—Purchase budgets and accounting. George Neesham of Wyckoff Drawn Steel Co., Chicago.

Jan. 12—Purchasing paint and glass. E. J. Peters of Pittsburgh Plate Glass Co.

Jan. 19—Price; supply and demand; market analysis; price records; terms and discounts; contracts; speculative buying. Albert Korsan of Globe Steel Tubes Co.

Jan. 26—Examination.

Freight carloadings reached a seven-year peak in the last two weeks of September. The greatest increase was registered in coal shipments; the greatest decrease was in ores.



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## Obituary

ADELBERT G. CLARK, 51, for more than twenty-five years purchasing agent for Shepard-Niles Crane & Hoist Co., Montour Falls, N. Y., died August 6th at the Robert Parker Hospital, Sayre, Penna.

NORIS HOVEY, for the past twenty-five years purchasing agent for the University of California, died at his home in Berkeley, August 18th.

LEWIS M. WILLIAMS, 62, one of the co-founders of the Sherwin-Williams Co., Cleveland, and purchasing agent of that company at the time of his retirement several years ago, died of a heart ailment, August 31st, at his home, Riverode Farms, Hunting Valley.

RALPH F. MORTON, 54, assistant purchasing agent of Gilbert & Barker Mfg. Co., died September 11th at the Mercy Hospital, Springfield, Mass.

CARROLL A. HOUSTON, 43, former purchasing agent of the West Penn Hospital, Pittsburgh, died September 25th of a heart ailment.

### Essentials of Quality in Conveyor Belts

(Continued from page 21)

Fabric weight, 28, 32, 36 and 42 oz.  
Tensile strength of covers, 3,500 to 4,000 lbs.

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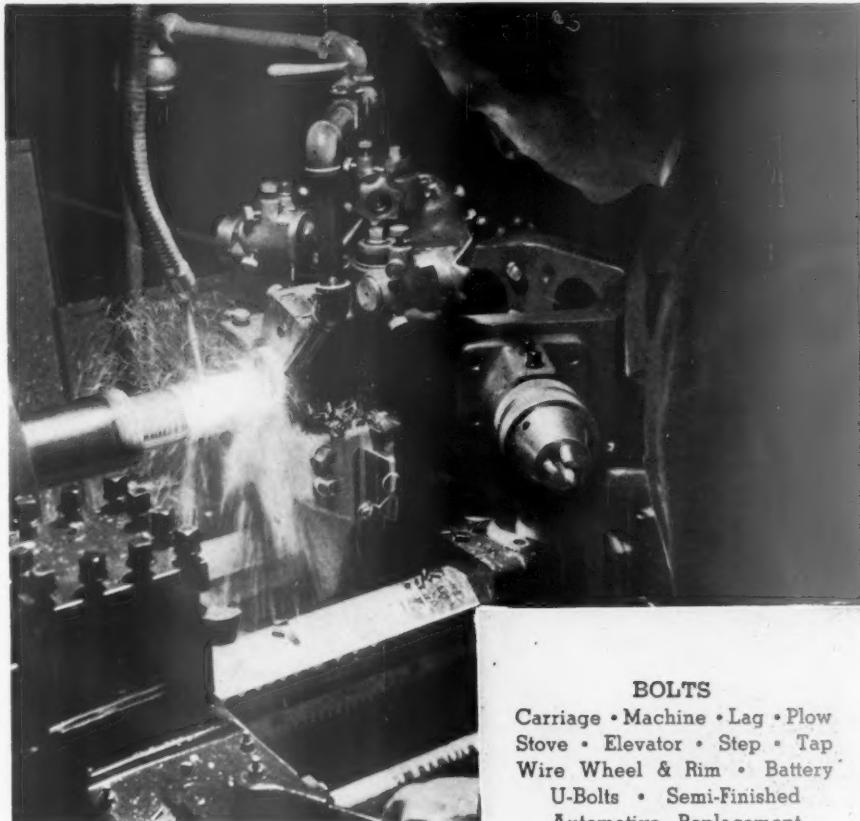
For conditions where the loading conditions, the weights and the abrasiveness of the materials are somewhat above the average—

Fabric weight, 28 and 32 oz.  
Tensile strength of covers, 1,400 to 2,000 lbs.

Friction between plies, 12 to 15 lbs.

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OCTOBER 1937



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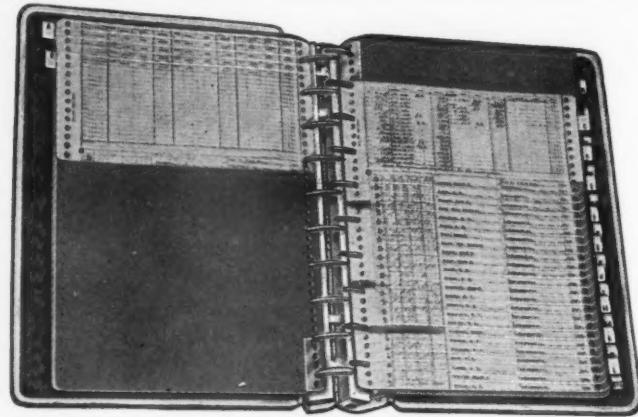
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Fabric weight, 28 and 32 oz.  
Tensile strength of covers, 800 to 1,000  
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Friction between plies, 12 to 15 lbs.

### **Elevator Belts**

For the most extreme conditions of weight and abrasiveness as encountered in copper mining—

Fabric weight, 34 oz. hard woven duck.  
Tensile strength of covers, 3,500 to  
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Friction, 20 to 24 lbs.

For elevating stone to crushers, handling heavy wet sand, coke and coal, lime limestone, gravel, etc.—

Fabric weight, 36 oz. standard elevator  
duck.  
Tensile strength of covers, 2,500 to 3,000  
lbs.  
Friction, 16 to 19 lbs.

For average conditions as to weight and abrasiveness such as in elevating dry sand, small crushed stone, gravel, etc.—

Fabric weight, 32 oz., standard elevator  
duck.

Tensile strength of covers, 800 to 1,000  
lbs.  
Friction, 12 to 15 lbs.

For centrifugal discharge, fast moving  
grain elevating—

Fabric weight, 28 and 32 oz.  
Normal frictioned surface.  
Friction, 16 to 19 lbs.

A new development in belt conveying is shown in Fig. 2. This is a duplex system in which two belts are used. On top is the belt which carries and is in contact with the load and takes the wear. Under it is the belt which transmits the power. The life of the latter, not being subjected to wear, will last for a much longer time than the former, which can be replaced when necessary. The idea is, of course, that with the conventional type of belt the duck is the material which carries the weight of the material and transmits the power, and represents one half, or more, of the cost of the whole belt; and the rubber cover, which takes the wear, represents the balance of the cost. Yet when the cover wears out the whole belt is useless.

### **Canvas Belts**

There are two distinct qualities of stitched canvas belting. One quality is made of comparatively light weight commercial duck and is

mainly used for agricultural purposes. The other quality is constructed of heavy duck of a special, tight weave and is so processed as to fit it for severe service in conveying, bucket elevating and power transmission. In the following discussion reference is made only to high quality belts for industrial purposes other than for power transmission.

One of the principal features of high grade stitched canvas belting is the exceptional quality of the duck used, which is the backbone of the belt. It is a special weave of heavy duck densely woven and of extremely high tensile strength. The manufacturers of such belting have rigid specifications for their duck and test each roll received from the mills to insure the maintenance of their standards.

Canvas belts are assembled in the number of layers, or plies, required and are stitched together in specially designed sewing machines, the rows of stitches being about one quarter of an inch apart. There are also a number of rows of inner stitches holding the inside plies together. Since the stitching holds the plies together inseparably, it is not necessary to use a loose weave duck as with other types of belting held together with cements of various kinds. The stitching itself is of the "lock-stitch" variety which will not run or pull out when broken. Hence it is impossible for belts of this class to separate at the plies even when used on the hardest service. This absence of ply separation during the life of the belt is one of the outstanding characteristics of high grade stitched canvas belting.

Another attribute of this class of belting is the method of treating, or compounding, so as to produce a belt suitable for a wide variety of service conditions. After the duck is stitched together the belting is impregnated with a suitable compound. The compounds used are of different kinds and may be varied greatly in composition and physical properties, and consequently several styles of belting may be produced having the same canvas duck base but varying enormously in physical characteristics. Thus belts may be

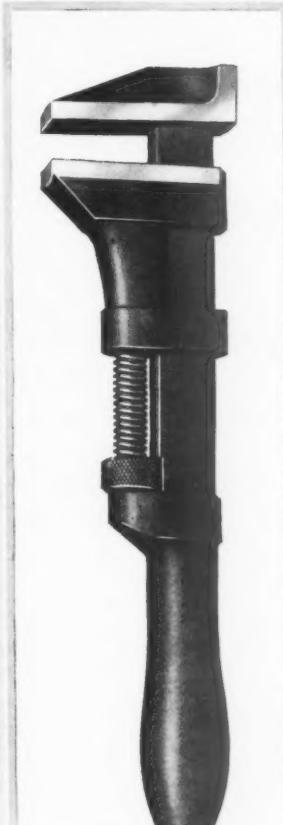
made with a high coefficient of friction for heavy power transmission, or they may be made with a low coefficient of friction so that they will slide easily and therefore be suitable for conveying on slider board construction, or for use where packages, bags or boxes are to be deflected off the surface of the belt. They may also be impregnated so as to handle hot material, abrasive material, oily material, and many other substances. This adaptability of the compounding ingredients to fit the belt to meet a wide variety of service requirements is an important feature of high quality canvas belts.

One of the leading manufacturers of this type of belt uses  $37\frac{1}{2}$  ounce fabric with a minimum tensile strength of 600 lbs. per inch of width for all of its products except those belts used for store service, which are of 33.6 ounce fabric. The number of plies and the nature of the impregnation are, of course, varied to meet the service conditions.

Every impregnating compound must penetrate the fibers of all the threads composing the duck base and must also lubricate and waterproof the belt throughout its life, in addition to giving it the particular physical characteristics which the conditions call for. Thus when abrasive work is involved, the type of compound employed is such as to greatly toughen the duck and add to its wear resisting quality. And as the compound penetrates the whole thickness of the belt, each ply becomes a wearing ply, so that with the best grades of stitched canvas belts they will wear down ply by ply until they are too thin to carry the tension. For non-abrasive work, it is important that the impregnating compound should not deteriorate with age in order to provide for the long life which the service conditions make possible. They are used by the large mail order houses, department stores and post offices for the handling of packages.

The table in Fig. 3 has been compiled by one of the leading canvas belt manufacturers. In this table it will be seen what treatments are given to make the belts suitable for

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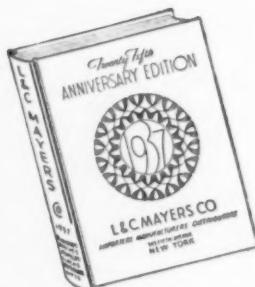
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different purposes. However, this can well be clarified with a few brief explanations. Thus a linseed oil base impregnation with a colored coating is used to make the canvas tough and abrasion resistant when carrying rugged materials and heavy weights, and to afford protection against contact with mineral oils. The oil treatment, however, is not effective against moisture, high heat, acids and certain other chemicals. For such conditions the belts are given a black bituminous impregnation to protect and keep them pliable. The wax treatment referred to in the table consists of impregnating the belt with a paraffin or similar compound. This is desirable for services where a clean surface is needed and where the materials consist of light packages, or the like, but where some resistance to mild abrasion is called for and where it is desirable to provide a slight degree of resistance to moisture and changes in temperature. Another manufacturer provides a treatment which can be applied at nominal expense to prevent the materials from slipping when the conveyor is inclined at an angle of as much as 27 degrees. The untreated belt is used for light work under dry conditions.

Another type of canvas belt which has met with great success in hot locations is covered with asbestos cloth. It is used for conveying such materials as hot foundry sand, cement, bone char in sugar refineries, lime rock, zinc ore and so forth, where the temperatures run as high as 600 degrees. Still another type has a smooth flexible cellulose coating which provides for easy cleaning and is designed for applications in the food and other industries where cleanliness is of particular importance, but it is not suitable for constant operating temperatures in excess of 100°F. For conveying fragile materials like plate glass, crockery, lamp bulbs and so forth, it is possible to cement a covering of felt, of any desired thickness and degree of softness, to the top of the canvas base, which many or may not be treated, according to conditions.



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PURCHASING

Finally, it is interesting to note that stitched canvas belts up to twelve ply and 72 inches in width are standard for all services, and that 96 inch wide belts are in use in some of the U. S. Post Offices, although in the latter the load requirements do not call for more than five plies. These large sizes are, of course, made to order as the demand is not large. The sizes carried in stock by most manufacturers do not run above 36 inches in width.

### The Voice with or without a Smile

(Continued from page 34)

heard of 'em, we say to ourselves. No, not Bracket—Packet. The mystery deepens. "Surely not Jacket?" you inquire. No, but maybe Racket. And finally it proves to be the Consolidated Casket Company, whose energetic and wholly unexpected "traveler" stopped in on the chance of picking up an order.

Clearness in speech cannot be overestimated as a money saving factor in business. That old bromide has amused me more than once:

"Operator, I want Germantown 4-7-1-3."

"Germantown 4-1-7-3."

"No, operator—4-7-1-3."

"Yes, 4-1-7-3."

Whereupon the patience of the telephone patron reached an end. "Okay, operator, have it your own way."

There is another sub-head of the telephone service of great importance in a busy day. Long distance conversations require especial handling. It is of course a modern miracle, that a long arm can reach out over hundreds of miles and find John Smith, with whom one will talk with even better clarity than if he were here in Philadelphia. We become so accustomed to these modern miracles that we fail to appraise the acts that take place. Of course, John may also be busy, so that immediate connections are not possible even though long distance has a right of way. My

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phlegm did rise, however, when I was called from a tense conversation to be informed by the long distance operator that my call could not be completed because Mr. Robert Public was in conference. Such irritating misadventures are so unusual on a well operated board that they merely illustrate, by exception, the general rule of amazingly satisfactory long distance service.

The person who staffs a company's switchboard has a very important post. In fact, the first-person-met function of the PBX board is of the same characteristic as the customs officer, the sentinel at the barrier, the ambassador who builds or destroys good will. One phase of her work often escapes attention momentarily. In a sizable office, wives and occasionally husbands will call their mates. How these calls are handled may make a lot of difference—to the operator. Clever girls will recognize voices in this division instantly, and extend a consideration that is implied more than spoken. Theoretically, all calls should get the same fine reception, but common sense will prevail on the best regulated boards.

From time to time, an innocent call is too curious, and then the sentinel at the outpost has to be particularly alert. An innocent answer may be all too revealing. I recall a competitor who inquired of a receptionist (who also "covered the board") whether Mr. X was in. He received the proper answer, that Mr. X was out of town. She then turned to the switchboard to answer an inside call, to the effect that Mr. X was in Paradise, D. C. I don't believe the poor girl ever realized what she had said. Naturally the visitor, with a burst of tact, excused himself. Those in the street said he went around the corner so fast that his vest pockets dipped sand—for at Paradise, D. C. there was but one buyer—the one and only IT—and business was brewing. If one is sleuthing, the rule of the British Service maintains: get your information from the enemy, but get it so that he does not know you have

it. This applies at the company telephone frontier too.

One reason why telephony intrigues me as a study is because one can get so fed up with that nerve-wracking persistent intrusion which is absolutely essential but which can become our mortal enemy. Certain doctors who foregather in Maine have a delightful installation inside the cabin door—a rubber telephone. The very first thing expected of every newcomer is that he pounce upon that telephone and abuse it with all the ferocity of a maniac. Hurl it against the ceiling, stamp on it, chastise it, curse it, and after this relieving ceremony is performed he qualifies for a week in the woods. My rule at home is simpler—no answer until the sixteenth ring. I would take the thing out of the house if I had my way, and if it were not for the fact of the unexpected emergency in which it would be priceless and indispensable, and for that occasional delightful vocal interlude that it provides.

### Electric Power Production

(Continued from page 33)

Compilations of the consumption by various classes of consumers cannot be made for about six weeks after the end of the month to which they most closely apply.

The Edison Electric Institute issues a weekly publication known as "Electric Power Output" every Wednesday for the week ending the previous Saturday, and showing the kilowatt hour output for that week. This is the electrical barometer which perhaps enjoys widest publication in the financial pages of the newspapers. Power production in seven divisions of the United States are recorded and their percentage of net change over a week ago and year ago.

The same institute also issues more elaborate statistical bulletins, one of the latest being entitled: "The Electric Light and Power Industry in the United States," giving figures and facts for the period of 1926-1935 and preliminary data

for 1936, known as "Statistical Bulletin No. 4."

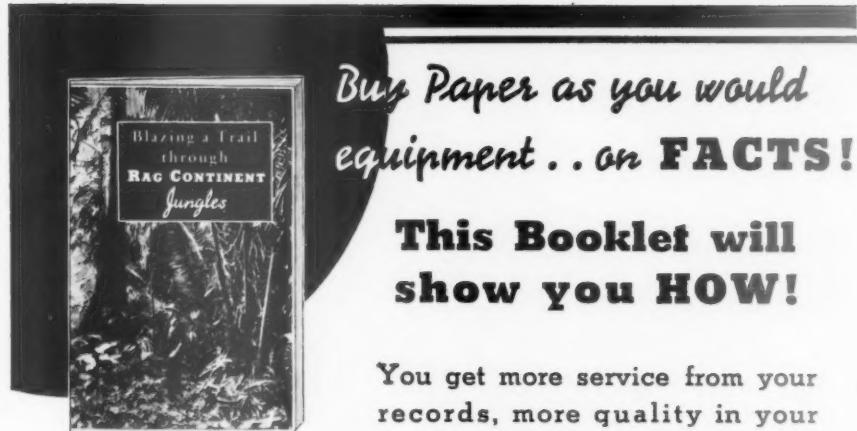
Statistics of the electrical industry not only have a meaning for business in general but also a specific meaning for certain groups such as those who supply the electrical industry with materials. Thus the Edison Institute furnishes figures on dollars spent for new construction. Copper producers may note that such expenditures have been light for a year or two which implies a revival soon of copper purchasing for wires and other electrical equipment.

Salesmen of electrical appliances might well follow those districts where electric power consumption is increasing most rapidly. Thus for the week ended August 14 last, the Rocky Mountain states showed an increase of 16.7% over the corresponding week of 1936, the largest gain of any area.

A few interesting though perhaps miscellaneous facts may well be mentioned at this time. During 1936 the electric light and power industry for the first time in any calendar year had an output in excess of 100 billion kilowatt hours, and its revenue from ultimate consumers passed the two billion dollar mark. The total number of customers receiving electric service on Dec. 31, 1936, was estimated at 26,100,000, an increase of 3.1% over a year before. At the end of that year it was estimated that 14.1% of all farms having occupied dwellings were receiving electric service, with the saturation point figured at 20.8%.

At the close of 1936 the cost of electricity in the average home was 46% below 1913, while the cost of living was 44% above 1913. In fifteen years the amount of electricity which has been made from a given quantity of fuel has doubled. Virtually the only line of consumption in which the use is declining is electric railways, there having been a constant drop since 1926.

Probably no industry has a better future and more greatly stimulates the imagination on its possibilities than the great electric light and power industry in the United States.



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Here at last is a booklet that will show you how to select the most serviceable papers for your records, the most effective for your stationery—both at no extra cost, perhaps at a real saving.

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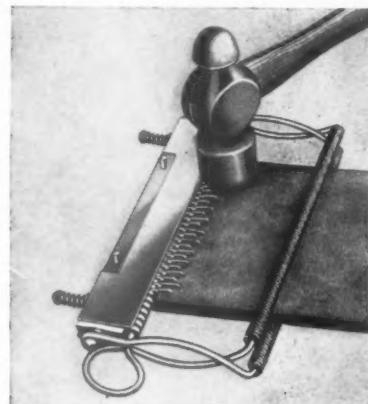
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strength many times as great; can be machined, polished and plated; and will withstand temperatures high enough to permit its use on hot water tanks or low pressure steam systems. Adaptable for production and repair jobs, assembly of cast or sheet aluminum products, or joining aluminum with stainless steel, cast iron or copper; also for filling in blow holes in aluminum or other castings. Designed for use with a special all-metal flux that dissipates oxides on the surface of metal preparatory to the application of solder. It can be applied with blow torch, welding torch or large soldering iron. Sold in complete kits or by the pound.

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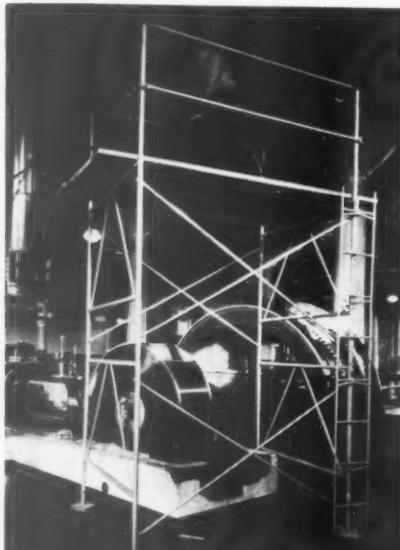


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*Use coupon page 64*

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*Use coupon page 64*

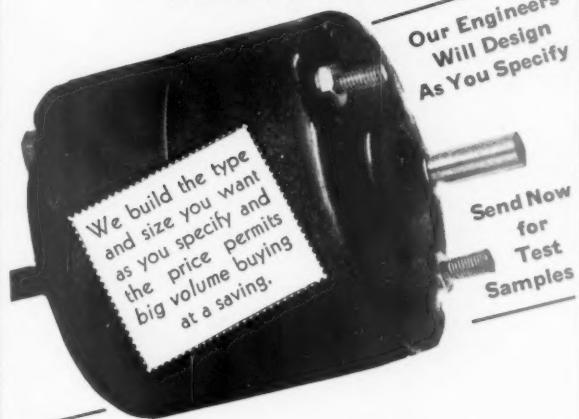
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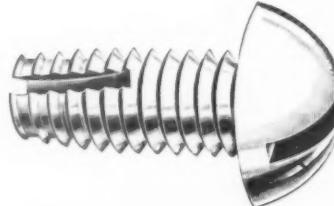


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## PNEUMATIC HAMMER



No. 489

FEATURES OF THIS NEW pneumatic hammer are: (1) Triggerless design, which is less cramping to the operator and eliminates a common cause of air leakage. Pressure of the tool against the work automatically opens the valve, and release of pressure stops the hammer from operating. (2) A tool holder

designed to lock the tools in position, making it unnecessary to hold the tools while working with the hammer, giving the operator complete control, and eliminating the hazard and delay of tools falling out. The tools are easily inserted or removed by a quick push or pull. Provided in two models. The larger will handle star drills up to  $1\frac{1}{4}$  inch. Overall length is  $14\frac{1}{2}$  inches, weight  $13\frac{1}{2}$  pounds, stroke  $\frac{7}{8}$  inch, operates at 1,800 blows per minute on 100 lbs. of air.

*Use coupon page 64*



### STAPLING MACHINE

No. 490

A SERIES OF SIMPLE mechanical features have been incorporated in the design of this new fastener to eliminate the greatest obstacle to perfect stapling performance—that of service troubles resulting from jamming. Chief among these features is complete inside accessibility. The upper section of the head can be swung back so that the entire staple channel, where probably 90% of all troubles occur, is wide open. Any staple that will not feed properly can be instantly removed by opening the device and dumping it out, thereby saving time and annoyance.

*Use coupon page 64*



### AUTODIAL TELEPHONE

No. 491

RECENTLY DEVELOPED IS this device which automatically dials a series of telephone numbers that are in frequent use. Twelve stations, as desired by the telephone subscriber, are set up in the equipment when installed, and any one of these numbers may be transmitted by merely setting the pointer opposite the desired name and then depressing the lever. The machine automatically transmits the digits of the proper number. It does not replace the dial, which is still required for calls to stations other than those registered in the mechanism, and it does not affect ordinary dial operation. In addition to the 12-station model illustrated, there is a 52-station model which may be used with an existing telephone or attached to a private exchange switchboard.



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Sales offices: Detroit, Chicago, Indianapolis, Kansas City, St. Louis, Cleveland, Toledo, Akron, Racine and Cincinnati

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THE MONTH  
*Owensboro*  
Hotel OWENSBORO KENTUCKY



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WACO, TEXAS..... RALEIGH HOTEL



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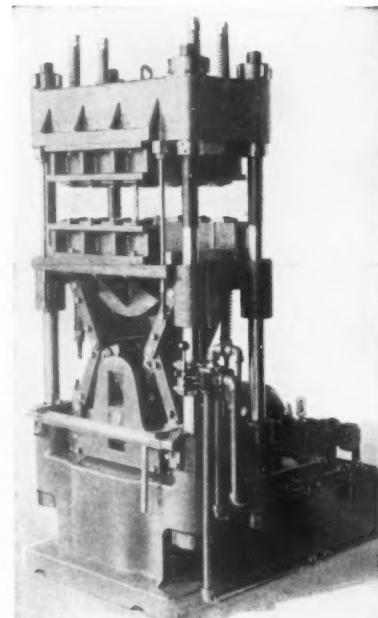
## DUPLICATOR

No. 492

THIS VERSATILE DUPLICATING machine operates on the liquid rotary offset principle, requiring no inks, gelatin or stencils. It duplicates directly from typed, written or drawn originals, requires no preparation. Master copy can be instantly changed, and master sheets filed for use at any future time. A precision machine, it registers with complete accuracy, even on complicated designs or forms, duplicates in several colors at one operation, and can be used on any smooth finish paper from cardboard to tissue. Adapted to use for work tickets, shop and office forms, specifications and diagrams, school work, graphs and charts, sketches, tickets and labels, and many other purposes.

Use coupon page 64

## MOLDING PRESS

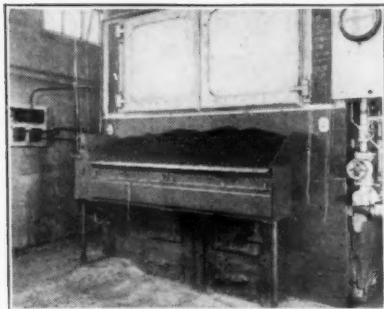


No. 493

THIS SELF-CONTAINED molding press, made in four models of 50, 100, 150 and 300 tons, has been improved to increase its flexibility and adapt the equipment to a wide range of pressures. By either one of two simple adjustments, it is now possible to reduce the total rated capacity. For continued maintenance of pressure, a simple adjustment, requiring but a few seconds to make, in the high pressure pump release valve changes the pressure delivered on the platen of the pump from its total capacity to any desired point down to approximately

one-third its rated capacity. The same results may be accomplished by lowering the position of the thrust block. An indicator attached to the block and a pressure scale on the guide make this an easy matter. These two features are of great advantage to shops doing diversified work that requires wide range of pressures, and to custom molders, who often find it necessary to mold with less pressure than the rated capacity of a press, yet, because of the area of the mold, must use that press.

*Use coupon page 64*



### OVERFEED STOKER

No. 494

**I**N THIS NEWLY improved stoker equipment, the coal is held in a hopper above the hand-firing doors. This arrangement has the advantage of permitting hand firing in the case of an emergency, and is suitable for installation in old hand-fired equipment and existing forced draft boilers, frequently without even changing the grates. Power-driven adjustable feed screws advance the fuel through the setting onto inclines at the front of the fire box. Riding down these small inclines, it is picked up and distributed over the fire bed by compressed air issuing from nozzles at the base of the incline. This process has a double purpose. In addition to distributing the coal, the air also serves to complete the combustion and improves the efficiency of the unit. The stoker will satisfactorily handle coal in sizes from  $1\frac{1}{2}$  to dust. The assembly includes an automatic damper regulator, pressure, time and limit switches. It responds quickly to fluctuating loads, and the adjustments are simply made.

*Use coupon page 64*



### GRINDING MACHINE

No. 495

**M**OUNTED ON A TRIPOD truck, fitted with three double-wheel casters, this machine is readily portable for use in sanding, grinding, buffing, polishing or drilling operations wherever required. The motor is supported on trunnions that permit tilting it up or down. A convenient pan is provided to hold tools and various handpieces. Equipped with a 6-foot flexible shaft, ball bearing throughout.

*Use coupon page 64*

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\* Time, issue of June 7, 1937

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*TR has in excess of 15,000 factual descriptions from manufacturers.*

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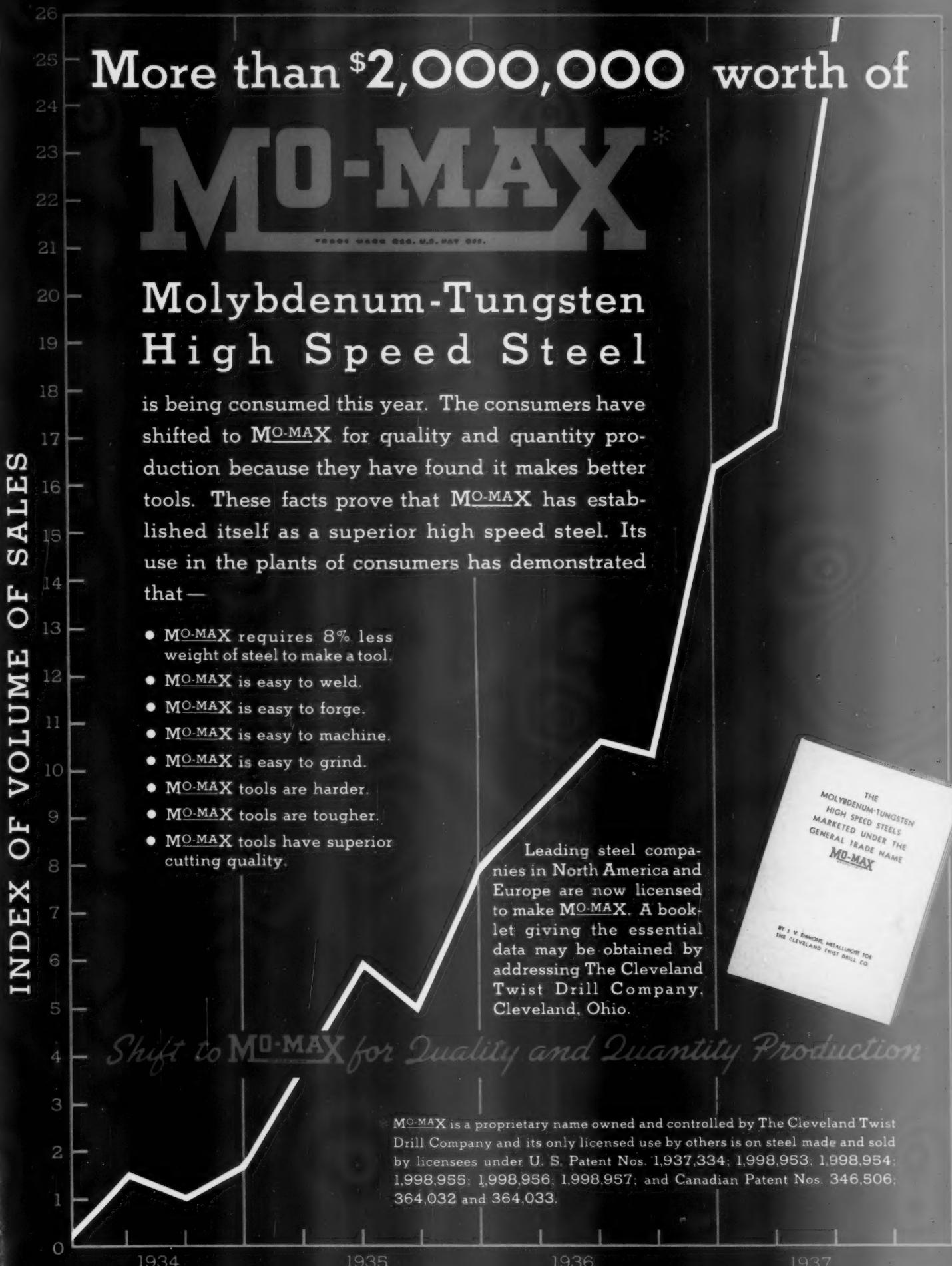
**5—TO INVESTIGATE** possible savings which can be effected by substitutions or improvements in present material, machinery, and methods.

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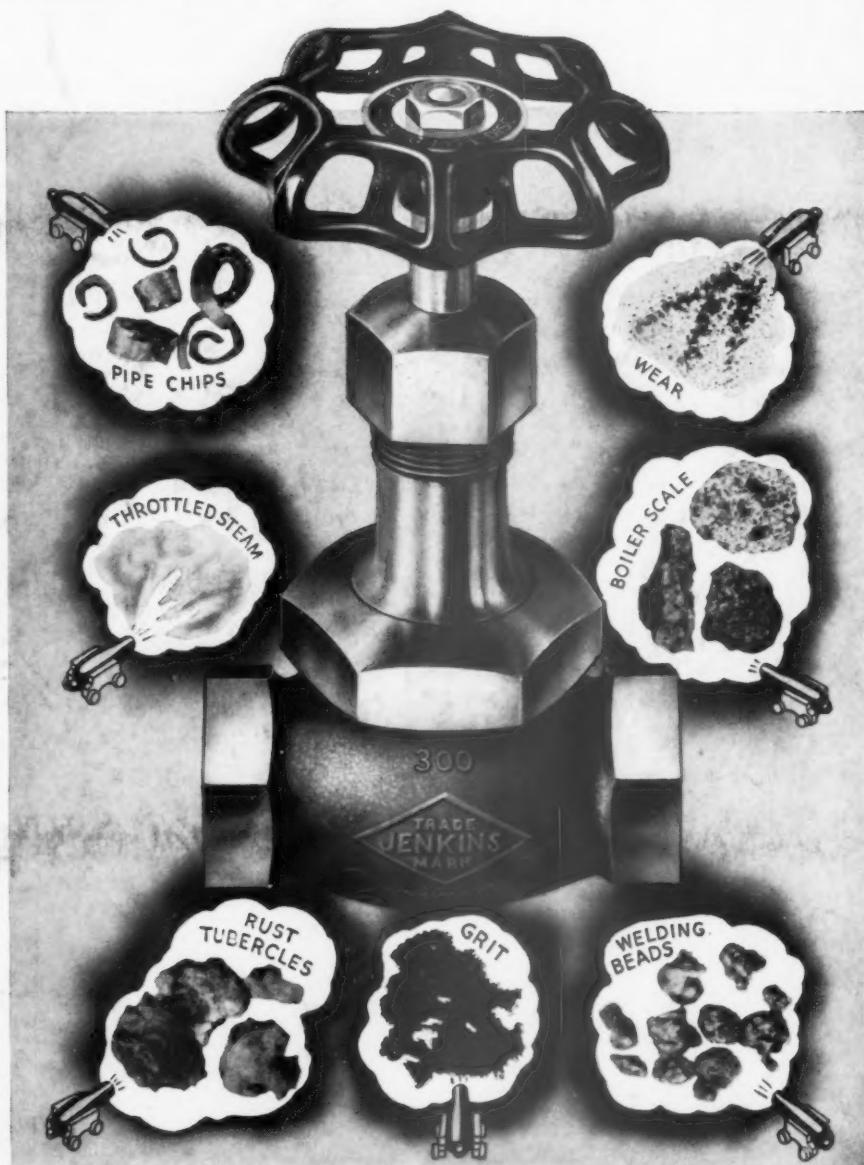
In presenting this Fig. 976 Plug-Seat Valve, Jenkins Bros. is confident that it is as near to being wear-proof, maintenance-proof and trouble-proof as a stock valve can be made. Back of it is a long period of development and testing to prepare it for the toughest services.

Natural enemies of valve seats such as boiler scale, pipe chips, grit and other substances commonly encountered in pipe lines, cannot injure the seating parts. Plug and seat ring are made of Jenkins JX500, a superior stainless steel having a Brinell hardness in excess of 500. Maximum wear-resistance is obtained and maintenance, due to seat damage, is reduced to the lowest possible degree.

Put this Jenkins to a service test on the worst place you know... continuous throttling for pressure reduction or free blow duty such as soot blowers, injectors, heating coils, or on any steam line where close regulation is required. Fig. 976 is specially recommended where such severe service is encountered. The JX500 plug and seat practically nullify wear and almost entirely eliminate danger of wire drawing and cutting.

If you have a tough valve job we ask only that you let this new Fig. 976 show what it can save you in maintenance and replacement expense. Ask your supply house for complete information, or write us.

JENKINS BROS., 80 White Street, New York; 510 Main Street, Bridgeport; 524 Atlantic Ave., Boston; 133 North Seventh Street, Philadelphia; 822 Washington Boulevard, Chicago; JENKINS BROS., Limited, Montreal, Can.; London, England



Illustrated is Fig. 976 for 300 lbs. W.S.P., or 600 lbs. O.W.G.

**HOW HARD IS 500 BRINELL?** Nothing that would conceivably get into the valve could scratch the Jenkins JX500 stainless steel seat. Compare 500 Brinell hardness with the hardness of some substances which do get into pipe lines...boiler scale, pipe chips, welding beads, rust tubercles, iron oxides...even with other familiar objects that are softer, such as a common nail which is under 200 Brinell hardness.

*Jenkins Valves* **MADE FOR LIFETIME SERVICE**

